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AN INDEX-CATALOGUE OF THE GENUS-GROUP NAMES OF ORIENTAL AND AUSTRALASIAN TACHINIDAE (DIPTERA) AND THEIR TYPE-SPECIES

R. W. CROSSKEY

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BY

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AN INDEX-CATALOGUE OF THE GENUS-GROUP NAMES OF ORIENTAL AND AUSTRALASIAN TACHINIDAE (DIPTERA) AND THEIR TYPE-SPECIES

By R. W. CROSSKEY

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SYNOPSIS

A catalogue is given of all genus-group names of Tachinidae based upon type-species from the Oriental Region, including Japan, and from the Australasian Region, including New Zealand. The type-species is cited for each genus-group name, together with the mode of fixation and the name of any valid senior synonym where known. The catalogue includes 514 genus-group names, of which 15 are replacement names for preoccupied homonyms (including five new names here proposed) and 3 are alternative original spellings: of the remaining 496 names, 488 are nomenclaturally available (467 of them proposed for full genera and 21 as subgenera), and 8 are unavailable. A summary is given of the junior homonyms and their replacement names, and a synoptic list of genus-group names based on type-species from the Commonwealth of Australia is provided for the convenience of Australian dipterists.

INTRODUCTION

A PRIME difficulty in the taxonomy of Tachinidae arises from the very large number of genus-group names that have been proposed and the lack of any concise works bringing them together, even on a regional basis. Townsend's *Manual of Myiology* (1934–1942 in 12 parts, São Paulo), although helpful in many ways, is difficult to use and is now much outdated; the only work containing an up-to-date catalogue of genus-group names of Tachinidae for any region is the recently-published *Catalog of the Diptera of America North of Mexico* (1965, U.S. Department of Agriculture).

A basic requirement for revisionary work on the Tachinidae of the Oriental, Australasian and Ethiopian Regions is the compilation of, firstly, index-catalogues of genus-group names and type-species, and, at a later stage, of complete catalogues in systematic order containing full information on the status and whereabouts of the type-material of all described species. The present paper is a first contribution on these lines and provides a full index-catalogue of all genus-group names of Tachinidae based on type-species described from the Oriental and Australasian Regions.

This catalogue covers the Oriental Region (including those parts of southern China such as Szechwan that are normally considered Oriental) and the whole Australasian Region, of which New Zealand is considered an integral part. I have also included the genus-group names based upon type-species from Japan, although probably rather less than half of the Japanese tachinid fauna is of Oriental origin. I accept Weber's line (coinciding with the ethnic boundary between Indonesia and Melanesia) as the junction between the Oriental and Australasian Regions, as it appears to reflect the zoogeography of tachinidae rather better than Wallace's line.

The 514 names in the catalogue comprise 280 names for the Oriental Region exclusive of Japan, 17 names for Japan, 140 names for the Commonwealth of Australia, 24 names for Melanesia and Polynesia and 53 names for New Zealand. The fact that there are twice as many names of the genus-group for the Oriental Region as for Australia does not indicate that there is a real difference in the generic composition of the tachinid fauna of the two areas—merely that the Australian fauna is less well known and was not worked upon by Townsend (almost all of whose manifold genera were monotypic). The excessive splitting of Townsend (who provided 1491 new generic and 1555 new trivial names: Arnaud, 1958, *Microentomology* **23** : 4) has fortunately affected the taxonomy of the Old World fauna less drastically than that of the New World, and the present catalogue contains the relatively modest number of 198 Townsend names. Nevertheless, most of these are undoubtedly unnecessary, and many have already been sunk in synonymy by Mesnil (1944–1965, *Flieg. Palaearkt. Reg.* **64**g : 1–879) and Crosskey (1966, *Proc. R. ent. Soc. Lond.* (B) **35** : 95–104).

Mesnil, in his papers on new Oriental Tachinidae (1953, *Bull. Annls Soc. r. ent. Belg.* **89** : 85–114 ; 146–178 and 1957, *Mém. Soc. r. ent. Belg.* **28** : 1–80) has published the descriptions of twenty-three genera in the form of combined " n.g., n. sp." descriptions : in each case, however, the first part of the description compares the new genus with other genera and cites characters that may be regarded as differentiating the generic, rather than the specific, taxon, and I therefore accept the names concerned as available and satisfying Article 13 (i) of the *International Code of Zoological Nomenclature.*

All but one of the twenty-four Oriental and Australasian genera described by Brauer & Bergenstamm (1889–1894, *Denkschr. Akad. Wiss., Wien* **56** : 69–180 ; **58** : 305–446 ; **60** : 89–240 and **61** : 537–624) were monotypic, but for nine of the twenty-three monotypic genera Brauer & Bergenstamm made it clear by the use of the word " für " or " Type " that they were erecting the genus for a particular species. For these nine genera I have cited the type-species as fixed by original designation : the others are fixed by monotypy.

The generic name *Glossidionophora* Bigot, 1885 is omitted, since it is based on the Neotropical species *Glossidionophora nigra* Bigot, 1885 by the subsequent designation of Townsend (1916, *Insecutor Inscit. menstr.* **4** : 7), and not—as Paramonov (1956, *Aust. J. Zool.* **4** : 368) has stated in error—on the Australian species *Glossidionophora bicolor* Bigot, 1885. The name *Biomyioides* Matsumura, 1916 is also omitted as there seems no doubt at all that this name must apply to a species of *Silbomyia* Macquart (Calliphoridae : Ameniinae), judging from the excellent description in

English, although I have been unable to trace the type-material of the type-species to confirm this (*Biomyioides* Matsumura, 1916, *Thousand Insects of Japan*, Addit. **2** : 388 was overlooked by Townsend and omitted from the *Manual of Myiology* and the name has remained enigmatic).

The unique female holotype (in Zoölogisch Museum, Amsterdam) of the type-species of *Cypselopteryx* Townsend, 1926, has been examined while preparing this paper and found to belong in the aberrant subfamily Eginiinae of the Muscidae, and the name *Cypselopteryx* is therefore omitted from the catalogue. *Wagneriopsis* Townsend, 1927, is omitted as—despite the similarity of the name to *Wagneria* R.-D.—this name applies to a Rhinophorid and is a synonym of *Acampomintho* Villeneuve, 1927 (synonymy in Townsend, 1938, *Man. Myiol.* **6** : 207).

Finally it should be noted that Baranov spelt his name with either a terminal " v" or " ff " in his papers on Oriental Tachinidae : I have not differentiated in the catalogue but have adopted the " v " ending throughout.

In the following list, available genus-group names are printed in bold italic capitals, preoccupied homonyms and unavailable names in italic capitals.

Alphabetical Catalogue of Genus-Group Names

ACEPHANA Townsend, 1916, *Can. Ent.* **48** : 153. Type-species: ***Masicera rubrifrons*** Macquart, 1847 [= *Masicera rufifacies* Macquart, 1847], by original designation. TASMANIA.

ACTINOCHAETOPTERYX Townsend, 1927, *Ent. Mitt.* **16** : 277. Type-species: ***Actinochaetopteryx actifera*** Townsend, 1927, by original designation. FORMOSA.

ACUCERA Malloch, 1930, *Proc. Linn. Soc. N.S.W.* **55** : 328. Type-species: ***Acucera montana*** Malloch, 1930, by original designation. NEW SOUTH WALES.

ACUPHOCERA Townsend, 1926, *Supplta ent.* **14** : 37. Type-species: ***Acuphocera sumatrensis*** Townsend, 1926 [= *Musca varia* Fabricius, 1794], by original designation. SUMATRA.

AGALMIA Enderlein, 1936, *Veröff. dt. Kolon.-u. Übersee-Mus. Bremen* **1** : 433. Type-species: ***Rutilia albopicta*** Thomson, 1869, by original designation. NEW SOUTH WALES.

AKOSEMPOMYIA Villeneuve, 1932, *Bull. Annls Soc. r. ent. Belg.* **71** : 243. Type-species: ***Akosempomyia caudata*** Villeneuve, 1932, by monotypy. FORMOSA.

ALOPHOROPHASIA Townsend, 1927, *Philipp. J. Sci.* **33** : 287. Type-species: ***Alophorophasia alata*** Townsend, 1927, by original designation. PHILIPPINE REPUBLIC.

ALTAIA Malloch, 1938, *Trans. Proc. R. Soc. N.Z.* **68** : 208. Type-species: ***Altaia geniculata*** Malloch, 1938, by original designation. NEW ZEALAND.

AMPHIBOLIA Macquart, 1843, *Mém. Soc. Sci. Agric. Lille* **1843** : 278. *Dipt. exot.* **2**, pt. 3 : 121. Type-species: ***Amphibolia valentina*** Macquart, 1843, by original designation. AUSTRALIA.

AMPHITROPESA Townsend, 1933, *Jl N.Y. ent. Soc.* **40** : 463. Type-species: ***Amphitropesa elegans*** Townsend, 1933, by original designation. NEW SOUTH WALES.

AMPLIPILA Curran, 1927, *Ent. Mitt.* **16** : 446. Type-species: ***Amplipila versicolor*** Curran, 1927 [= *Crypsina prima* Brauer & Bergenstamm, 1889], by original designation. QUEENSLAND.

ANAEUDORA Townsend, 1933, *Jl N.Y. ent. Soc.* **40** : 468. Type-species: ***Anaeudora aureocephala*** Townsend, 1933, by original designation. FORMOSA.

ANAGONIA Brauer & Bergenstamm, 1891, *Denkschr. Akad. Wiss., Wien* **58** : 348. *Musc. Schiz.* **2** : 44. Type-species: ***Anagonia spylosioides*** Brauer & Bergenstamm, 1891 [= *Masicera rufifacies* Macquart, 1847], by monotypy. TASMANIA.

ANAMASTAX Brauer & Bergenstamm, 1891, *Denkschr. Akad. Wiss., Wien* **58** : 349. *Musc. Schiz.* **2** : 45. Type-species: ***Anamastax australis*** Townsend, 1933 [= *Blepharipeza goniaeformis* Brauer & Bergenstamm, not of Macquart, by misidentification], by original designation. QUEENSLAND.

ANAPERISTOMMYIA Townsend, 1926, *Supplta ent.* **14** : 15. Type-species: ***Anaperistommyia optica*** Townsend, 1926, by original designation. SUMATRA.

ANATROPOMYIA Malloch, 1930, *Proc. Linn. Soc. N.S.W.* **55** : 126. Type-species: ***Anatropomyia flavicornis*** Malloch, 1930, by original designation. NEW SOUTH WALES.

ANAVORIA Mesnil, 1953, *Bull. Annls Soc. r. ent. Belg.* **89** : 170. Type-species: ***Voria*** (***Anavoria***) ***indica*** Mesnil, 1953, by monotypy. INDIA. (As subgenus of *Voria* Robineau-Desvoidy, 1830).

ANDROCYPTERA Townsend, 1927, *Philipp. J. Sci.* **33** : 286. Type-species: ***Androcyptera anorbitalis*** Townsend, 1927, by original designation. PHILIPPINE REPUBLIC.

ANEOGMENA Brauer & Bergenstamm, 1891, *Denkschr. Akad. Wiss., Wien* **58** : 385. *Musc. Schiz.* **2** : 81. Type-species: ***Aneogmena fischeri*** Brauer & Bergenstamm, 1891, by monotypy. INDIA, EAST INDIES.

ANUROPHYLLINA Mesnil, 1961, *Flieg. Palaearkt. Reg.* **64**g : 693. Unavailable, no fixation of a type-species.

This name was proposed for a subgenus of *Urophyllina* Villeneuve, 1937, with four included Oriental species; it is invalid under Article 13 (b) of the *International Code of Zoological Nomenclature*.

APALPOSTOMA Malloch, 1930, *Proc. Linn. Soc. N.S.W.* **55** : 134. Type-species: ***Apalpostoma cinerea*** Malloch, 1930, by original designation. WESTERN AUSTRALIA.

APALPUS Malloch, 1929, *Proc. Linn. Soc. N.S.W.* **54** : 318. Type-species: ***Apalpus dorsalis*** Malloch, 1929, by original designation. WESTERN AUSTRALIA.

APATEMYIA Macquart, 1846, *Mém. Soc. Sci. Agric. Lille* **1844** : 325. *Dipt. exot.* Suppl. **1** : 197. Type-species: ***Apatemyia longipes*** Macquart, 1846, by monotypy. TASMANIA.

APHANTORHAPHOPSIS Townsend, 1926, *Supplta ent.* **14** : 34. Type-species: ***Aphantorhaphopsis orientalis*** Townsend, 1926, by original designation. SUMATRA.

APHRIMYOBIA Townsend, 1926, *Supplta ent.* **14** : 36. Type-species: ***Aphrimyobia simillima*** Townsend, 1926, by original designation. SUMATRA.

APILIA Malloch, 1930, *Proc. Linn. Soc. N.S.W.* **55** : 345. Type-species: ***Apilia cilifera*** Malloch, 1930 [= *Blepharella lateralis* Macquart, 1851], by original designation. QUEENSLAND.

APROTHECA Macquart, 1851, *Mém. Soc. Sci. Agric. Lille* **1850** : 148. *Dipt. exot.* Suppl. **4** : 175. Type-species: ***Aprotheca rufipes*** Macquart, 1851, by monotypy. TASMANIA (probably in error for NEW SOUTH WALES).

ARCHIMERA Mesnil, 1954, *Flieg. Palaearkt. Reg.* **64**g : 371. Type-species: ***Platymyia*** (***Archimera***) ***oncoperae*** Mesnil, 1954 [= *Exorista diversicolor* Macquart, 1847], by monotypy. TASMANIA. (As subgenus of *Platymya* Robineau-Desvoidy, 1830).

ARGYROTHELAIRA Townsend, 1916, *Proc. U.S. natn. Mus.* **51** : 311. Type-species: ***Argyrothelaira froggattii*** Townsend, 1916, by original designation. SOLOMON ISLANDS.

ARRHENOMYZA Malloch, 1929, *Proc. Linn. Soc. N.S.W.* **54** : 322. Type-species: ***Arrhenomyza conspicua*** Malloch, 1929, by original designation. WESTERN AUSTRALIA.

ARRHINODEXIA Townsend, 1927, *Ent. Mitt.* **16** : 282. Type-species: ***Arrhinodexia atrata*** Townsend, 1927, by original designation. FORMOSA.

ARTHURIA Malloch, 1938, *Trans. Proc. R. Soc. N.Z.* **68** : 166. Type-species: ***Arthuria dimorpha*** Malloch, 1938, by original designation. NEW ZEALAND.

Name preoccupied by *Arthuria* Dall, 1881 (Mollusca), see *Montanarturia* Miller, 1945.

ASBELLOPSIS Townsend, 1927, *Philipp. J. Sci.* **34** : 378. Type-species: ***Asbellopsis luzonensis*** Townsend, 1927, by original designation. PHILIPPINE REPUBLIC.

ASETULIA Malloch, 1938, *Trans. Proc. R. Soc. N.Z.* **68** : 187. Type-species: ***Asetulia nigropolita*** Malloch, 1938, by original designation. NEW ZEALAND.

ASIOCARCELIA Baranov, 1934, *Trans. R. ent. Soc. Lond.* **82** : 407. Type-species: ***Carcelia caudata*** Baranov, 1931, by original designation. FORMOSA.

ATRACTOCEROPS Townsend, 1916, *Proc. U.S. natn. Mus.* **51** : 307. Type-species: ***Atractocerops ceylanica*** Townsend, 1916, by original designation. CEYLON.

ATRACTODEXIA Bigot, 1885, *Bull. Soc. ent. Fr.* **1885** : xxxii. Type-species: ***Atractodexia argentifera*** Bigot, 1885 [= *Sumpigaster fasciatus* Macquart, 1855], by monotypy. NEW CALEDONIA.

AUSTRALOTACHINA Curran, 1938, *Proc. Linn. Soc. N.S.W.* **63** : 194. Type-species: ***Australotachina calliphoroides*** Curran, 1938, by original designation. QUEENSLAND.

AUSTRODEXIA Malloch, 1930, *Proc. Linn. Soc. N.S.W.* **55** : 122. Type-species: ***Austrodexia setigera*** Malloch, 1930, by original designation. NEW SOUTH WALES.

AUSTROMACQUARTIA Townsend, 1934, *Jl N.Y. ent. Soc.* **42** : 248. Type-species: ***Macquartia claripennis*** Malloch, 1932, by original designation. NEW ZEALAND.

AUSTROPHASIA Townsend, 1916, *Insecutor Inscit. menstr.* **4** : 45. Type-species: ***Hyalomyia rufiventris*** Macquart, 1851, by original designation. TASMANIA (probably in error for NEW SOUTH WALES).

AUSTROPHASIOPSIS Townsend, 1933, *Jl. N.Y. ent. Soc.* **40** : 448. Type-species: ***Austrophasiopsis formosensis*** Townsend, 1933, by original designation. FORMOSA.

AUSTROPHOROCERA Townsend, 1916, *Can. Ent.* **48** : 157. Type-species: ***Phorocera biserialis*** Macquart, 1847, by original designation. TASMANIA.

AUSTROPHRYNO Townsend, 1916, *Can. Ent.* **48** : 160. Type-species: ***Tachina densa*** Walker, 1852 [= *Exorista diversicolor* Macquart, 1847], by original designation. NEW SOUTH WALES.

AVIBRISSIA Malloch, 1932, *Rec. Canterbury Mus.* **3** : 436. Type-species: ***Avibrissia longirostris*** Malloch, 1932, by original designation. NEW ZEALAND.

AVIBRISSINA Malloch, 1932, *Rec. Canterbury Mus.* **3** : 438. Type-species: ***Avibrissina brevipalpis*** Malloch, 1932, by original designation. NEW ZEALAND.

BACTROMYIELLA Mesnil, 1952, *Flieg. Palaearkt. Reg.* **64g** : 240. Type-species: ***Bactromyiella aureocincta*** Mesnil, 1952 [= *Masicera ? ficta* Walker, 1861], by original designation. QUEENSLAND, FIJI.

BALLARDIA Curran, 1927, *Bull. ent. Res.* **18** : 166. Type-species: ***Ballardia pallipes*** Curran, 1927, by original designation. QUEENSLAND.

BARYDEXIA Townsend, 1928, *Philipp. J. Sci.* **34** : 379. Type-species: ***Barydexia bivittata*** Townsend, 1928, by original designation. PHILIPPINE REPUBLIC.

BELLINA Robineau-Desvoidy, 1863, *Hist. nat. Dipt. Env. Paris* **2** : 194. Type-species: ***Bellina melanura*** Robineau-Desvoidy, 1863, by monotypy. INDIA.

BESSERIOIDES Curran, 1938, *Proc. Linn. Soc. N.S.W.* **63** : 185. Type-species: ***Besserioides sexualis*** Curran, 1938, by original designation. QUEENSLAND.

BEZZIOMYIOBIA Baranov, 1938, *Vet. Arh.* **8** : 172. Type-species: ***Bezziomyiobia nigripes*** Baranov, 1938, by original designation. SOLOMON ISLANDS.

BIOMYOPSIS Townsend, 1927, *Suppl ta ent.* **16** : 60. Type-species: ***Biomyopsis sumatrensis*** Townsend, 1927, by original designation. SUMATRA.

BLEPHARELLA Macquart, 1851, *Mém. Soc. Sci. Agric. Lille* **1850** : 176. *Dipt. exot.* Suppl. **4** : 203. Type-species: ***Blepharella lateralis*** Macquart, 1851, by monotypy. INDIA.

BOROMYIA Mesnil, 1957, *Mém. Soc. r. ent. Belg.* **28** : 16. Type-species: ***Boromyia gastrula*** Mesnil, 1957, by monotypy. BURMA.

BOTHROPHORA Schiner, 1868, *Reise Novara, Zool.* **2**, Dipt. : 317. Type-species: ***Bothrophora zelebori*** Schiner, 1868, by original designation. NEW ZEALAND.

BOTHROSTIRA Enderlein, 1936, *Veröff. dt. Kolon-u. Übersee-Mus. Bremen* **1** : 413. Type-species: ***Bothrostira prisca*** Enderlein, 1936, by original designation. NEW BRITAIN.

BOTRIOPSIS Townsend, 1928, *Philipp. J. Sci.* **34** : 389. Type-species: ***Botriopsis bakeri*** Townsend, 1928, by original designation. PHILIPPINE REPUBLIC.

BRACHYMEROPSIS Townsend, 1926, *Supplta ent.* **14** : 36. Type-species: ***Brachymeropsis sumatrensis*** Townsend, 1926, by original designation. SUMATRA.

CALCAGER Hutton, 1901, *Trans. N.Z. Inst.* **33** : 48. Type-species: ***Calcager apertum*** Hutton, 1901, by subsequent designation of Townsend, 1916, *Insecutor Inscit. menstr.* **4** : 6. NEW ZEALAND.

CALCAGERIA Curran, 1927, *Ent. Mitt.* **16** : 442. Type-species: ***Calcageria incidens*** Curran, 1927, by original designation. NEW ZEALAND.

CALOPYGIDIA Malloch, 1930, *Proc. Linn. Soc. N.S.W.* **55** : 349. Type-species: ***Calopygidia analis*** Malloch, 1930 [= *Eurigaster tasmaniae* Walker, 1858], by original designation. NEW SOUTH WALES.

CALOSIA Malloch, 1938, *Trans. Proc. R. Soc. N.Z.* **68** : 233. Type-species: ***Zealandotachina*** (***Calosia***) ***binigra*** Malloch, 1938, by original designation. NEW ZEALAND. (As subgenus of *Zealandotachina* Malloch, 1938).

CALOTACHINA Malloch, 1938, *Trans. Proc. R. Soc. N.Z.* **68** : 176. Type-species: ***Calotachina tricolor*** Malloch, 1938, by original designation. NEW ZEALAND.

CALOTHERESIA Townsend, 1926, *Supplta ent.* **14** : 29. Type-species: ***Calotheresia sumatrensis*** Townsend, 1926, by original designation. SUMATRA.

CALOTHERESIOPSIS Baranov, 1932, *Wien. ent. Ztg* **49** : 214. Type-species: ***Calotheresia orientalis*** Baranov, 1932 [= *Dexia basifera* Walker, 1860], by original designation. CELEBES. (As subgenus of *Calotheresia* Townsend, 1926).

CALOZENILLIA Townsend, 1927, *Supplta ent.* **16** : 67. Type-species: ***Calozenillia auronigra*** Townsend, 1927, by original designation. SUMATRA.

CALYPTROMYIA Villeneuve, 1915, *Annls hist.-nat. Mus. natn. hung.* **13** : 92. Type-species: ***Calyptromyia barbata*** Villeneuve, 1915, by original designation. FORMOSA.

CAMPBELLIA Miller, 1923, *Trans. N.Z. Inst.* **54** : 432. Type-species: ***Campbellia campbelli*** Miller, 1923, by subsequent designation of Townsend, 1938, *Man. Myiol.* **7** : 43. NEW ZEALAND.

Townsend (1938, *Man. Myiol.* **7** : 43) cites the type-species of *Campbellia* as fixed by original designation, but Miller did not designate either of the two originally included species as the type: the type-species is here held to be fixed therefore by subsequent designation of Townsend (loc. cit.).

CAMPYLIA Malloch, 1938, *Trans. Proc. R. Soc. N.Z.* **68** : 239. Type-species: ***Calcager temerarium*** Hutton, 1901, by original designation. NEW ZEALAND.

CARCELIELLA Baranov, 1934, *Trans. R. ent. Soc. Lond.* **82** : 398. Type-species: ***Carcelia octava*** Baranov, 1931, by original designation. FORMOSA.

CARCELIMYIA Mesnil, 1944, *Flieg. Palaearkt. Reg.* **64g** : 26. Type-species: ***Exorista dispar*** Macquart, 1851, by original designation. AUSTRALIA.

CARCELIOPSIS Townsend, 1927, *Supplta ent.* **16** : 66. Type-species: ***Carceliopsis sumatrensis*** Townsend, 1927, by original designation. SUMATRA.

CATACARCELIA Townsend, 1927, *Supplta ent.* **16** : 66. Type-species: ***Catacarcelia kockiana*** Townsend, 1927, by original designation. SUMATRA.

CATAPARIPROSOPA Townsend, 1927, *Ent. Mitt.* **16** : 285. Type-species: ***Catapariprosopa curvicauda*** Townsend, 1927, by original designation. FORMOSA.

CENTETER Aldrich, 1923, *Proc. U.S. natn. Mus.* **63** (6) : 3. Type-species: ***Centeter cinerea*** Aldrich, 1923, by original designation. JAPAN.

CEROSOMYIA Hutton, 1901, *Trans. N.Z. Inst.* **33** : 57. Type-species: ***Cerosomyia usitata*** Hutton, 1901, by monotypy. NEW ZEALAND.

CHAETEXORISTA Brauer & Bergenstamm, 1894, *Denkschr. Akad. Wiss., Wien* **61** : 616. *Musc. Schiz.* **4** : 80. Type-species: ***Chaetexorista javana*** Brauer & Bergenstamm, 1894, by monotypy. JAVA.

CHAETOGASTRINA Malloch, 1929, *Proc. Linn. Soc. N.S.W.* **54** : 313. Type-species: ***Chaetogastrina stolida*** Malloch, 1929, by original designation. NEW SOUTH WALES.

CHAETOMYIOBIA Brauer & Bergenstamm, 1894, *Denkschr. Akad. Wiss., Wien* **61** : 617. *Musc. Schiz.* **4** : 81. Type-species: ***Chaetomyiobia javana*** Brauer & Bergenstamm, 1894, by monotypy. JAVA.

CHAETOPHTHALMUS Brauer & Bergenstamm, 1891, *Denkschr. Akad. Wiss., Wien* **58** : 383. *Musc. Schiz.* **2** : 79. Type-species: ***Micropalpus brevigaster*** Macquart, 1846, by subsequent designation of Townsend, 1916, *Insecutor Inscit. menstr.* **4** : 6. TASMANIA.

Townsend (1939, *Man. Myiol.* **8** : 223) cites *brevigaster* as type-species of *Chaetophthalmus* by designation of Brauer & Bergenstamm, 1893 (*Denkschr. Akad. Wiss., Wien* **60** : 145; *Musc. Schiz.* **3** : 57), but Brauer & Bergenstamm do not give a valid type-fixation for *Chaetophthalmus* since *brevigaster* Macquart is cited as an example only (see Opinion 98 of the International Commission on Zoological Nomenclature): the fixation of Townsend (1916, loc. cit.) is therefore the first valid type-fixation.

CHAETOPLETHA Malloch, 1938, *Trans. Proc. R. Soc. N.Z.* **68** : 194. Type-species: ***Plethochaetigera*** (***Chaetopletha***) ***centralis*** Malloch, 1938, by original designation. NEW ZEALAND. (As subgenus of *Plethochaetigera* Malloch, 1938).

CHAETOPTILIOPSIS Baranov, 1938, *Bull. ent. Res.* **29** : 411. Type-species: ***Chaetoptiliopsis burmanica*** Baranov, 1938, by original designation. BURMA.

CHAETOWEBERIA Villeneuve, 1932, *Bull. Soc. ent. Fr.* **1932** : 271. Type-species: ***Weberia rubiginans*** Villeneuve, 1932, by original designation. FORMOSA. (As subgenus of *Weberia* Robineau-Desvoidy, 1830).

CHARITELLA Mesnil, 1957, *Mém. Soc. r. ent. Belg.* **28** : 31. Type-species: ***Charitella gracilis*** Mesnil, 1957, by monotypy. BURMA.

CHETOGASTER Macquart, 1851, *Mém. Soc. Sci. Agric. Lille* **1850** : 198. *Dipt. exot.* Suppl. **4** : 225. Type-species: ***Chetogaster violacea*** Macquart, 1851, by monotypy. AUSTRALIA.

CHLORODEXIA Townsend, 1916, *Can. Ent.* **48** : 154. Type-species: ***Chlorodexia froggattii*** Townsend, 1916, by original designation. NEW SOUTH WALES.

CHLOROGASTER Macquart, 1851, *Mém. Soc. Sci. Agric. Lille* **1850** : 157. *Dipt. exot.* Suppl. **4** : 184. Type-species: ***Chlorogaster tasmanensis*** Macquart, 1851, by monotypy. TASMANIA (probably in error for NEW SOUTH WALES).

Name preoccupied by *Chlorogaster* Swainson, 1839 (Pisces), see *Chlorogastrina* n. n.

CHLOROGASTRINA **n. n.** for *Chlorogaster* Macquart, 1851, preoccupied by *Chlorogaster* Swainson, 1839. Type-species: ***Chlorogaster tasmanensis*** Macquart, 1851.

CHLOROGASTROPSIS Townsend, 1926, *Philipp. J. Sci.* **29** : 544. Type-species: ***Chlorogaster rufipes*** Schiner, 1868, by original designation. NEW ZEALAND.

CHLOROPALES Mesnil, 1950, *Flieg. Palaearkt. Reg.* **64g** : 109. Type-species: ***Chloropales luteifacies*** Mesnil, 1950, by original designation. NEW GUINEA.

CHLOROTACHINA Townsend, 1915, *Proc. biol. Soc. Wash.* **28** : 21. Type-species: ***Chrysosoma flaviceps*** Macquart, 1851, by original designation. AUSTRALIA.

CHROMOCHARIS Enderlein, 1936, *Veröff. dt. Kolon.-u. Übersee-Mus. Bremen* **1** : 432. Type-species: ***Rutilia atribasis*** Walker, 1861, by original designation. BATCHIAN (= BATJAN).

CHRYSOPASTA Brauer & Bergenstamm, 1889, *Denkschr. Akad. Wiss., Wien* **56** : 152. *Musc. Schiz.* **1** : 84. Type-species: ***Chrysopasta versicolor*** Brauer & Bergenstamm, 1889, by monotypy. AUSTRALIA.

CHRYSOPYGIA Townsend, 1933, *Jl N.Y. ent. Soc.* **40** : 471. Type-species: ***Chrysopygia auricaudata*** Townsend, 1933, by original designation. JAVA.

CHRYSORUTILIA Townsend, 1915, *Proc. biol. Soc. Wash.* **28** : 23. Type-species: ***Rutilia formosa*** Robineau-Desvoidy, 1830, by original designation. AUSTRALIA.

CODIUM Enderlein, 1936, *Veröff. dt. Kolon.-u. Übersee-Mus. Bremen* **1** : 417. Type-species: ***Rutilia oblonga*** Macquart, 1847, by original designation. AUSTRALIA.

COMPSILUROIDES Mesnil, 1953, *Bull. Annls Soc. r. ent. Belg.* **89** : 105. Type-species: ***Compsiluroides communis*** Mesnil, 1953, by monotypy. BURMA.

COMPSOPTESIS Villeneuve, 1915, *Annls hist.-nat. Mus. natn. hung.* **13** : 90. Type-species: ***Compsoptesis phoenix*** Villeneuve, 1915, by subsequent designation of Townsend, 1931, *Ann. Mag. nat. Hist.* (10) **8** : 388. FORMOSA.

COSSIDOPHAGA Baranov, 1934, *Encycl. ent.* Série B II, **7** : 161. Type-species: ***Podomyia atkinsoni*** Aubertin, 1932, by original designation. INDIA.

CROSSOTOCNEMA Bigot, 1885, *Bull. Soc. ent. Fr.* **1885** : cci. Type-species: ***Crossotocnema javana*** Bigot, 1885, by monotypy. JAVA.

CRYPSINA Brauer & Bergenstamm, 1889, *Denkschr. Akad. Wiss., Wien* **56** : 97. *Musc. Schiz.* **1** : 29. Type-species: ***Crypsina prima*** Brauer & Bergenstamm, 1889, by monotypy. QUEENSLAND.

CRYPTOSPLYOSIA Townsend, 1928, *Philipp. J. Sci.* **34** : 388. Type-species: ***Cryptospylosia angustifrons*** Townsend, 1928, by original designation. PHILIPPINE REPUBLIC.

CURTOCERA Macquart, 1835, *Hist. nat. Ins. Dipt.* **2** : 182. Type-species: ***Duvaucelia bicincta*** Robineau-Desvoidy, 1830. New name for *Duvaucelia* Robineau-Desvoidy, 1830, preoccupied by *Duvaucelia* Risso, 1826.

CYLINDROMYIELLA Malloch, 1926, *Philipp. J. Sci.* **31** : 508. Type-species: ***Cylindromyiella bakeri*** Malloch, 1926, by original designation. PHILIPPINE REPUBLIC.

CYSTOMETOPIA Townsend, 1926, *Philipp. J. Sci.* **29** : 531. Type-species: ***Heterometopia rufipalpis*** Macquart, 1847, by original designation. AUSTRALIA.

DEGEERIOPSIS Mesnil, 1953, *Bull. Annls Soc. r. ent. Belg.* **89** : 104. Type-species: ***Degeeriopsis xanthogastra*** Mesnil, 1953, by monotypy. BURMA.

DELTA Malloch, 1930, *Proc. Linn. Soc. N.S.W.* **55** : 332. Type-species: ***Delta australiensis*** Malloch, 1930, by original designation. WESTERN AUSTRALIA.

Name preoccupied by *Delta* de Saussure, 1855 (Hymenoptera) and *Delta* Saalmueller, 1891 (Lepidoptera), see *Deltomyza* Malloch, 1931 and *Mallochiola* Strand, 1932.

DELTOMYZA Malloch, 1931, *Proc. Linn. Soc. N.S.W.* **56** : 298. Type-species: ***Delta australiensis*** Malloch, 1930. New name for *Delta* Malloch, 1930, preoccupied by *Delta* de Saussure, 1855 and *Delta* Saalmueller, 1891.

DEMOTICOIDES Mesnil, 1953, *Bull. Annls. Soc. r. ent. Belg.* **89** : 150. Type-species: ***Demoticoides pallidus*** Mesnil, 1953, by monotypy. INDIA.

DEXIOMIMA Brauer & Bergenstamm, 1894, *Denkschr. Akad. Wiss., Wien* **61** : 615. *Musc. Schiz.* **4** : 79. Type-species: ***Dexiomima javana*** Brauer & Bergenstamm, 1894, by monotypy. JAVA.

DEXIOMIMOPS Townsend, 1926, *Supplta ent.* **14** : 21. Type-species: ***Dexiomimops longipes*** Townsend, 1926, by original designation. SUMATRA.

DEXIOTRIX Villeneuve, 1936, *Bull. Soc. ent. Égypte* **20** : 330. Type-species: ***Dexiotrix longipennis*** Villeneuve, 1936, by original designation. CHINA (SZECHWAN).

DIAPHANIA Macquart, 1843, *Mém. Soc. Sci. Agric. Lille* **1843** : 277. *Dipt. exot.* **2**, pt. 3 : 120. Type-species: ***Diaphania testacea*** Macquart, 1843, by monotypy. AUSTRALIA.

Name preoccupied by *Diaphania* Huebner, 1818 (Lepidoptera), see *Prodiaphania* Townsend, 1927.

DIATRAEOPHAGA Townsend, 1916, *Proc. U.S. natn. Mus.* **51** : 320. Type-species: ***Diatraeophaga striatalis*** Townsend, 1916, by original designation. JAVA.

DICEPHALOMYIA Malloch, 1935, *Ann. Mag. nat. Hist.* (10) **16** : 337. Type-species: ***Dicephalomyia rufiventris*** Malloch, 1935, by original designation. BORNEO.

DIGLOSSOCERA Wulp, 1895, *Tijdschr. Ent.* **38** : 51. Type-species: ***Diglossocera bifida*** Wulp, 1895, by monotypy. JAVA.

DODDIANA Curran, 1927, *Ent. Mitt.* **16** : 352. Type-species: ***Doddiana pallens*** Curran, 1927, by original designation. QUEENSLAND.

DOLESCHALLA Walker, 1861, *J. Proc. Linn. Soc.* **5** : 242. Type-species: ***Doleschalla cylindrica*** Walker, 1861, by monotypy. NEW GUINEA.

DOLESCHALLOPSIS Townsend, 1933, *Jl N.Y. ent. Soc.* **40** : 459. Type-species: ***Doleschalla makilingensis*** Townsend, 1927, by original designation. PHILIPPINE REPUBLIC.

DOLICHOCOXYS Townsend, 1927, *Supplta ent.* **16** : 57. Type-species: ***Dolichocoxys femoralis*** Townsend, 1927, by original designation. SUMATRA.

DOLICHOPODOMINTHO Townsend, 1927, *Ent. Mitt.* **16** : 278. Type-species: ***Dolichopodomintho dolichopiformis*** Townsend, 1927, by original designation. FORMOSA.

DONOVANIUS Enderlein, 1936, *Veröff. dt. Kolon.-u. Übersee-Mus. Bremen* **1** : 409. Type-species: ***Musca regalis*** Guérin-Méneville, 1830, by original designation. AUSTRALIA.

DRINOMYIA Mesnil, 1962, *Flieg. Palaearkt. Reg.* **64g** : 759. Type-species: ***Oswaldia bicoloripes*** Mesnil, 1957, by original designation. JAPAN.

DUVAUCELIA Robineau-Desvoidy, 1830, *Mém. prés. div. Sav. Acad. Sci. Inst. Fr.* **2** : 227. Type-species: ***Duvaucelia bicincta*** Robineau-Desvoidy, 1830, by monotypy. BENGAL.

Name preoccupied by *Duvaucelia* Risso, 1826 (Mollusca), see *Curtocera* Macquart, 1835.

ECATOCYPTERA Townsend, 1927, *Ent. Mitt.* **16** : 285. Type-species: ***Ecatocyptera evibrissata*** Townsend, 1927, by original designation. FORMOSA.

ECHRYSOPASTA Townsend, 1932, *Ann. Mag. nat. Hist.* (10) **9** : 39. Type-species: ***Rutilia elegans*** Macquart, 1846, by original designation. NEW SOUTH WALES.

EFFTAYLORIA Malloch, 1941, *Proc. Linn. Soc. N.S.W.* **66** : 64. Type-species: ***Tayloria testacea*** Malloch, 1930. New name for *Tayloria* Malloch, 1930, preoccupied by *Tayloria* Bourguignat, 1889.

EIPOGONOIDES Curran, 1938, *Proc. Linn. Soc. N.S.W.* **63** : 195. Type-species: ***Eipogonoides ruficornis*** Curran, 1938, by original designation. NEW SOUTH WALES.

ELFRIEDELLA Mesnil, 1957, *Mém. Soc. r. ent. Belg.* **28** : 69. Type-species: ***Elfriedella amoena*** Mesnil, 1957, by monotypy. JAPAN.

ELODIMYIA Mesnil, 1952, *Flieg. Palaearkt. Reg.* **64g** : 242. Type-species: ***Elodimyia tricincta*** Mesnil, 1952, by original designation. SUNDA ISLANDS.

ENGYCERA Malloch, 1938, *Trans. Proc. R. Soc. N.Z.* **68** : 179. Type-species: ***Engycera politiventris*** Malloch, 1938, by original designation. NEW ZEALAND.

Name preoccupied by *Engycera* Saunders, 1866 (Coleoptera), see *Gracilicera* Miller, 1945.

EOACEMYIA Townsend, 1926, *Philipp. J. Sci.* **29** : 529. Type-species: ***Eoacemyia bakeri*** Townsend, 1926 [= *Tachina errans* Wiedemann, 1824], by original designation. SINGAPORE.

EOCARCELIA Townsend, 1919, *Proc. U.S. natn. Mus.* **56** : 582. Type-species: ***Eocarcelia ceylanica*** Townsend, 1919, by original designation. CEYLON.

EOCARCELIOPSIS Townsend, 1928, *Philipp J. Sci.* **34** : 392. Type-species: ***Eocarceliopsis bakeri*** Townsend, 1928, by original designation. PHILIPPINE REPUBLIC.

EOCYPTERA Townsend, 1927, *Ent. Mitt.* **16** : 284. Type-species: ***Eocyptera orientalis*** Townsend, 1927, by original designation. FORMOSA.

EOCYPTERULA Townsend, 1926, *Philipp. J. Sci.* **29** : 540. Type-species: ***Eocypterula atra*** Townsend, 1926, by original designation. PHILIPPINE REPUBLIC.

EODEXIOSOMA Townsend, 1926, *Suppl ta ent.* **14** : 15. Type-species: ***Eodexiosoma sumatrense*** Townsend, 1926, by original designation. SUMATRA.

EODOLICHOCOLON Townsend, 1933, *Jl N.Y. ent. Soc.* **40** : 478. Type-species: ***Dolichocolon orientale*** Townsend, 1927, by original designation. SUMATRA.

EOGYMNOPHTHALMA Townsend, 1926, *Suppl ta ent.* **14** : 35. Type-species: ***Eogymnophthalma orientalis*** Townsend, 1926 [= *Tachina orbata* Wiedemann, 1830], by original designation. SUMATRA.

EOMINTHO Townsend, 1926, *Philipp. J. Sci.* **29** : 531. Type-species: ***Eomintho equatorialis*** Townsend, 1926, by original designation. SINGAPORE.

EOMYOCERA Townsend, 1926, *Philipp. J. Sci.* **29** : 537. Type-species: ***Eomyocera carinata*** Townsend, 1926 [= *Dexia divergens* Walker, 1857], by original designation. PENANG.

EOMYOCEROPSIS Townsend, 1926, *Suppl ta ent.* **14** : 29. Type-species: ***Eomyoceropsis longipennis*** Townsend, 1926, by original designation. SUMATRA.

EOPARACHAETA Townsend, 1927, *Suppl ta ent.* **16** : 70. Type-species: ***Eoparachaeta orientalis*** Townsend, 1927, by original designation. SUMATRA.

EOPHYLLOPHILA Townsend, 1926, *Suppl ta ent.* **14** : 19. Type-species: ***Eophyllophila elegans*** Townsend, 1926, by original designation. SUMATRA.

EOPTILODEXIA Townsend, 1926, *Philipp. J. Sci.* **29** : 535. Type-species: ***Eoptilodexia longipes*** Townsend, 1926, by original designation. PHILIPPINE REPUBLIC.

EOZENILLIA Townsend, 1926, *Philipp. J. Sci.* **29** : 542. Type-species: ***Eozenillia equatorialis*** Townsend, 1926, by original designation. SINGAPORE.

EPIXORISTA Townsend, 1927, *Suppl ta ent.* **16** : 61. Type-species: ***Epixorista episcopa*** Townsend, 1927 [= *Isosturmia inversa* Townsend, 1927], by original designation. SUMATRA.

EPSEUDOCYPTERA Townsend, 1927, *Philipp. J. Sci.* **33** : 283. Type-species: ***Epseudocyptera epalpata*** Townsend, 1927, by original designation. PHILIPPINE REPUBLIC.

EREBIOMIMA Mesnil, 1953, *Bull. Annls Soc. r. ent. Belg.* **89** : 166. Type-species: ***Erebiomima luteisquama*** Mesnil, 1953, by monotypy. ? INDIA.

ERISTALIOMYIA Townsend, 1926, *Suppl ta ent.* **14** : 37. Type-species: ***Eristaliomyia nitidifrons*** Townsend, 1926 [= *Echinomyia brevipennis* Walker, 1857], by original designation. SUMATRA.

ERYTHRONYCHIA Brauer & Bergenstamm, 1891, *Denkschr. Akad. Wiss., Wien* **58** : 360. *Musc. Schiz.* **2** : 56. Type-species: ***Demoticus australensis*** Schiner, 1868, by monotypy. NEW ZEALAND.

EUAMPHIBOLIA Townsend, 1916, *Proc. U.S. natn. Mus.* **49** : 618. Type-species: ***Rutilia fulvipes*** Guérin-Méneville, 1843, by original designation. AUSTRALIA.

EUCOMPSA Enderlein, 1936, *Veröff. dt. Kolon.-u. Übersee-Mus. Bremen* **1** : 400. Type-species: ***Rutilia minor*** Macquart, 1846, by original designation. TASMANIA, NEW SOUTH WALES.

EUCOMUS Aldrich, 1926, *Proc. U.S. natn. Mus.* **69** (22) : 22. Type-species: ***Eucomus strictus*** Aldrich, 1926, by original designation. CHINA (SZECHWAN).

EUFISCHERIA Brauer & Bergenstamm, 1891, *Denkschr. Akad. Wiss., Wien* **58** : 374. *Musc. Schiz.* **2** : 70. Type-species: ***Eufischeria ceylanica*** Brauer & Bergenstamm, 1891, by monotypy. CEYLON.

EUGYMNOCHAETOPSIS Townsend, 1927, *Ent. Mitt.* **16** : 287. Type-species: ***Eugymnochaetopsis lateralis*** Townsend, 1927, by original designation. FORMOSA.

EUHAPALIVORA Gardner, 1940, *Indian J. Ent.* **2** : 179. Nomen nudum, unavailable.

Gardner (1940, *Indian J. Ent.* **2** : 179) published the name *Euhapalivora* in the binomen *Euhapalivora indica* which he attributed to Baranov; Baranov, however, never published this name. The specific name *indica* is available under Article 11(g) (ii) of the *International Code of Zoological Nomenclature* and is attributable to Gardner, but the generic name *Euhapalivora* is not accompanied by a definition of the generic taxon and does not fulfil the requirements of Article 13(a) of the *Code*; it is therefore an unavailable nomen nudum.

EUHYGIA Mesnil, 1960, *Flieg. Palaearkt. Reg.* **64**g : 645. Unavailable.

The generic name *Euhygia*, proposed by Mesnil (1960, *Flieg. Palaearkt. Reg.* **64**g : 645) for the Oriental species ***Hygia robusta*** Mesnil, 1952, is not accompanied by a definition of the generic taxon and is at present unavailable under Article 13 (a) of the *International Code of Zoological Nomenclature*.

EUHYPOCHAETOPSIS Townsend, 1928, *Philipp. J. Sci.* **34** : 394. Type-species: ***Euhypochaetopsis orientalis*** Townsend, 1928, by original designation. PHILIPPINE REPUBLIC.

EUPALPOCYPTERA Townsend, 1927, *Ent. Mitt.* **16** : 286. Type-species: ***Eupalpocyptera angusticauda*** Townsend, 1927, by original designation. FORMOSA.

EUPHASIA Townsend, 1908. *Smithson. misc. Collns* **51** (1803) : 76. New name for *Neophasia* Brauer & Bergenstamm, 1893, preoccupied by *Neophasia* Behr, 1869.

Name preoccupied by *Euphasia* Stephens, 1830 (Lepidoptera) and *Euphasia* Mulsant and Verreaux, 1876 (Aves), see *Neximyia* n.n.

EUPROCTIMYIA Villeneuve, 1921, *Ann. Soc. ent. Belg.* **61** : 157. Type-species: ***Euproctimyia pyrrhaspis*** Villeneuve, 1921, by monotypy. INDIA.

EURYGASTROPSIS Townsend, 1916, *Can. Ent.* **48** : 158. Type-species: ***Eurigaster tasmaniae*** Walker, 1858, by original designation. TASMANIA.

EUSTACOMYIA Malloch, 1927, *Proc. Linn. Soc. N.S.W.* **52** : 337. Type-species: ***Eustacomyia breviseta*** Malloch, 1927, by original designation. NEW SOUTH WALES.

EUTHELAIROSOMA Townsend, 1926, *Supplta ent.* **14** : 32. Type-species: ***Euthelairosoma chaetopygiale*** Townsend, 1926, by original designation. SUMATRA.

EUTOROCCA Townsend, 1919, *Proc. U.S. natn. Mus.* **56** : 554. Type-species: ***Eutorocca fasciata*** Townsend, 1919, by original designation. CEYLON.

EUTRIXOPSIS Townsend, 1919, *Insecutor Inscit. menstr.* **6** : 166. Type-species: ***Eutrixopsis javana*** Townsend, 1919, by original designation. JAVA.

EUVESPIVORA Baranov, 1942, *Vet. Arh.* **12** : 162. Type-species: ***Euvespivora orientalis*** Baranov, 1942, by original designation. JAVA.

EVERESTIOMYIA Townsend, 1933, *Jl N.Y. ent. Soc.* **40** : 466. Type-species: ***Everestiomyia antennalis*** Townsend, 1933, by original designation. MOUNT EVEREST.

EXECHOPALPUS Macquart, 1847, *Mém. Soc. Sci. Agric. Lille* **1846** : 91. *Dipt. exot.* Suppl. **2** : 75. Type-species: ***Exechopalpus rufipalpus*** Macquart, 1847, by monotypy. AUSTRALIA.

FERIOLA Mesnil, 1957, *Mém. Soc. r. ent. Belg.* **28** : 77. Type-species: ***Feriola longicornis*** Mesnil, 1957, by monotypy. BURMA.

FORMICOPHANIA Townsend, 1916, *Proc. U.S. natn. Mus.* **51** : 322. Type-species: ***Formicophania elegans*** Townsend, 1916, by original designation. THAILAND.

FORMOSIA Guérin-Méneville, 1843, *Rev. Zool. Soc. Cuvier.* **6** : 263. Type-species: ***Musca mirabilis*** Guérin-Méneville, 1830, by monotypy. OFFAK.

FORMOSODORIA Townsend, 1933, *Jl N.Y. ent. Soc.* **40** : 475. Type-species: ***Sturmia dilabida*** Villeneuve, 1916, by original designation. SOUTH AFRICA.

Townsend cited Formosa in the original description and the generic name alludes to this locality; although the type-species occurs in Formosa it was described from Natal.

FORMOSOLOPHOSIA Townsend, 1927, *Ent. Mitt.* **16** : 280. Type-species: ***Formosolophosia hemydoides*** Townsend, 1927, by original designation. FORMOSA.

FROGGATTIMYIA Townsend, 1916, *Can. Ent.* **48** : 155. Type-species: ***Froggattimyia hirta*** Townsend, 1916, by original designation. NEW SOUTH WALES.

FRONTINIELLOPSIS Townsend, 1927, *Supplta ent.* **16** : 61. Type-species: ***Frontiniellopsis sumatrensis*** Townsend, 1927, by original designation. SUMATRA.

GAEDIOGONIA Townsend, 1927, *Supplta ent.* **16** : 71. Type-species: ***Gaediogonia jacobsoni*** Townsend, 1927 [= *Tachina rufifrons* Wiedemann, 1830], by original designation. SUMATRA.

GASTROPTILOPS Mesnil, 1957, *Mém. Soc. r. ent. Belg.* **28** : 78. Type-species: ***Gastroptilops ater*** Mesnil, 1957, by monotypy. JAPAN.

GENOTRICHIA Malloch, 1938, *Trans. Proc. R. Soc. N.Z.* **68** : 164. Type-species: ***Genotrichia tonnoiri*** Malloch, 1938, by original designation. NEW ZEALAND.

GERALDIA Malloch, 1930, *Proc. Linn. Soc. N.S.W.* **55** : 327. Type-species: ***Geraldia hirticeps*** Malloch, 1930, by original designation. WESTERN AUSTRALIA.

GERMARIOCHAETA Villeneuve, 1937, *Bull. Mus. r. Hist. nat. Belg.* **13** (34) : 5. Type-species: ***Germariochaeta clavata*** Villeneuve, 1937, by monotypy. CHINA (SOOCHOW).

GEROCYPTERA Townsend, 1916, *Ent. News* **27** : 178. Type-species: ***Trichoprosopa marginalis*** Walker, 1860, by original designation. AMBOYNA.

GEROTACHINA Townsend, 1916, *Can. Ent.* **48** : 152. Type-species: ***Tachina obtusa*** Walker, 1852, by original designation. NEW SOUTH WALES.

GLOSSOSALIA Mesnil, 1947, *Encycl. ent.* Série B II, **10** : 62. Invalid, no fixation of type-species (two included species). Mesnil, 1960, *Flieg. Palaearkt. Reg.* **64**g : 606. Type-species: ***Phorocera grandis*** Macquart, 1851, by original designation. AUSTRALIA. (As subgenus of *Spoggosia* Rondani, 1859). Valid with date 1960.

GONANAMASTAX Townsend, 1933, *Jl N.Y. ent. Soc.* **40** : 472. Type-species: ***Blepharipeza goniaeformis*** Macquart, 1846, by original designation. TASMANIA.

GONIOPHANA Brauer & Bergenstamm, 1889, *Denkschr. Akad. Wiss., Wien* **56** : 97. *Musc. Schiz.* **1** : 29. Type-species: ***Gonia heterocera*** Macquart, 1846, by original designation. AUSTRALIA.

GONIOPHYTO Townsend, 1927, *Ent. Mitt.* **16** : 281. Type-species: ***Goniophyto formosensis*** Townsend, 1927, by original designation. FORMOSA.

GRACILICERA Miller, 1945, *Proc. R. ent. Soc. Lond.* (B) **14** : 72. Type-species: ***Engycera politiventris*** Malloch, 1938. New name for *Engycera* Malloch, 1938, preoccupied by *Engycera* Saunders, 1866.

GRAPHIA Wulp, 1885, *Tijdschr. Ent.* **28** : 196. Type-species: ***Graphia strigosa*** Wulp, 1885, by monotypy. HALMAHERA.

GRAPHOLOSTYLUM Macquart, 1851, *Mém. Soc. Sci. Agric. Lille* **1850** : 196. *Dipt. exot.* Suppl. **4** : 223. Type-species: ***Grapholostylum dorsomaculatum*** Macquart, 1851, by monotypy. TASMANIA (probably in error for NEW SOUTH WALES).

GRAPHOTACHINA Malloch, 1938, *Trans. Proc. R. Soc. N.Z.* **68** : 238. Type-species: ***Graphotachina sinuata*** Malloch, 1938, by original designation. NEW ZEALAND.

GYMNAMEDORIA Townsend, 1927, *Ent. Mitt.* **16** : 283. Type-species: ***Gymnamedoria medinoides*** Townsend, 1927 [= *Succingulum transvittatum* Pandellé, 1896], by original designation. FORMOSA.

HABROTA Enderlein, 1936, *Veröff. dt. Kolon.-u. Übersee-Mus. Bremen* **1** : 399. Type-species: ***Rutilia formosa*** Robineau-Desvoidy, 1830, by original designation. AUSTRALIA.

HALIDAYOPSIS Townsend, 1927, *Ent. Mitt.* **16** : 282. Type-species: ***Halidayopsis formosensis*** Townsend, 1927, by original designation. FORMOSA.

HAMAXIA Walker, 1860, *J. Proc. Linn. Soc.* **5** : 153. Type-species: ***Hamaxia incongrua*** Walker, 1860, by monotypy. AMBOYNA.

HAPALIOLOEMUS Baranov, 1934, *Encycl. ent.* Série B II, **7** : 162. Type-species: ***Hapalioloemus machaeralis*** Baranov, 1934, by original designation. INDIA.

In the original publication this name is spelled *Hepalioloemus* in the generic heading but *Hapalioloemus* in the description of the type-species: as the name is based on *Hapalia*, generic name of the host, the spelling *Hepalioloemus* is an inadvertent error.

HEGA Enderlein, 1936, *Veröff. dt. Kolon.-u. Übersee-Mus. Bremen* **1** : 421. Type-species: ***Hega viridicingens*** Enderlein, 1936, by original designation. BATJAN.

HEMIDEGEERIA Villeneuve, 1929, *Bull. Annls Soc. r. ent. Belg.* **69** : 66. Type-species: ***Hemidegeeria bicincta*** Villeneuve, 1929, by subsequent designation of Townsend, 1932, *Ann. Mag. nat. Hist.* (10) **9** : 36. FORMOSA.

HEMILINNAEMYIA Villeneuve, 1932, *Bull. Soc. ent. Fr.* **1932** : 269. Type-species: ***Hemilinnaemyia decorata*** Villeneuve, 1932, by original designation. FORMOSA.

HEPALIOLOEMUS Baranov, 1934. See *Hapalioloemus*.

HERTINGIA Mesnil, 1957, *Mém. Soc. r. ent. Belg.* **28** : 12. Type-species: ***Crossocosmia*** (***Hertingia***) ***pauciseta*** Mesnil, 1957, by original designation. JAPAN. (As subgenus of *Crossocosmia* Mik, 1890).

HETERIA Malloch, 1930, *Rec. Canterbury Mus.* **3** : 325. Type-species: ***Heteria appendiculata*** Malloch, 1930, by original designation. NEW ZEALAND.

HETEROMETOPIA Macquart, 1846, *Mém. Soc. Sci. Agric. Lille* **1844** : 298. *Dipt. exot.* Suppl. **1** : 170. Type-species: ***Heterometopia argentea*** Macquart, 1846, by monotypy. TASMANIA.

HEXAMERA Brauer & Bergenstamm, 1889, *Denkschr. Akad. Wiss., Wien* **56** : 132. *Musc. Schiz.* **1** : 64. Type-species: ***Hystricia orientalis*** Schiner, 1868, by monotypy. NEW ZEALAND.

HILLIA Malloch, 1929, *Proc. Linn. Soc. N.S.W.* **54** : 328. Type-species: ***Hillia polita*** Malloch, 1929, by original designation. NORTHERN TERRITORY (AUSTRALIA).

HOBARTIA Malloch, 1930, *Proc. Linn. Soc. N.S.W.* **55** : 127. Type-species: ***Hobartia peculiaris*** Malloch, 1930, by original designation. TASMANIA.

HOMOHEXAMERA Townsend, 1934, *Jl N.Y. ent. Soc.* **42** : 247. Type-species: ***Protohystricia huttoni*** Malloch, 1930, by original designation. NEW ZEALAND.

HOMOTRIXA Villeneuve, 1914, *Annls hist.-nat. Mus. natn. hung.* **12** : 437. Type-species: ***Homotrixa brevifacies*** Villeneuve, 1914, by monotypy. FORMOSA.

HUTTONOBESSERIA Curran, 1927, *Ent. Mitt.* **16** : 354. Type-species: ***Phania verecunda*** Hutton, 1901, by original designation. NEW ZEALAND.

HYGIA Mesnil, 1952, *Flieg. Palaearkt. Reg.* **64**g. : 222. Type-species: ***Blepharipoda eutachinoides*** Baranov, 1932, by original designation. FORMOSA.

Name preoccupied by *Hygia* Uhler, 1861 (Hemiptera). No replacement name is proposed as *Hygia* Mesnil is currently regarded as a junior subjective synonym of *Chaetexorista* Brauer & Bergenstamm, 1894.

HYGIELLA Mesnil, 1957, *Mém. Soc. r. ent. Belg.* **28** : 28. Type-species: ***Hygiella pygidialis*** Mesnil, 1957, by monotypy. BURMA.

HYLEORUS Aldrich, 1926, *Trans. Amer. ent. Soc.* **52** : 16. Type-species: ***Hyleorus furcatus*** Aldrich, 1926, by monotypy. QUEENSLAND.

HYSTRICINA Malloch, 1932, *Rec. Canterbury Mus.* **3** : 433. Type-species: ***Musca lupina*** Swederus, 1787, by original designation. NEW ZEALAND.

HYSTRICOVORIA Townsend, 1928, *Philipp. J. Sci.* **34** : 395. Type-species: ***Hystricovoria bakeri*** Townsend, 1928, by original designation. PHILIPPINE REPUBLIC.

IDANIA Enderlein, 1936, *Veröff. dt. Kolon.-u. Übersee-Mus. Bremen* **1** : 408. Type-species: ***Idania atrox*** Enderlein, 1936, by original designation. PHILIPPINE REPUBLIC.

The spelling *Jdania* is given in the original description, but Enderlein cites *Idania* as the correct spelling in a footnote on the same page.

ILLA Baranov, 1938, *Vet. Arh.* **8** : 171. Type-species: ***Illa mirabilis*** Baranov, 1938, by original designation. SOLOMON ISLANDS.

INDOSTURMIA Townsend, 1932, *Ann. Mag. nat. Hist.* (10) **9** : 49. Type-species: ***Indosturmia indica*** Townsend, 1932 [= *Crossocosmia indica* Brauer & Bergenstamm, 1893, nomen nudum], by original designation. INDIA.

ISOCARCELIOPSIS Baranov, 1934, *Trans. R. ent. Soc. Lond.* **82** : 406. Type-species: ***Isocarceliopsis hemimacquartioides*** Baranov, 1934, by original designation. FORMOSA.

ISOCHAETINA Mesnil, 1950, *Flieg. Palaearkt. Reg.* **64**g : 157. Type-species: ***Drino*** (***Isochaetina***) ***dimorpha*** Mesnil, 1950, by monotypy. INDIA. (As subgenus of *Drino* Robineau-Desvoidy, 1863).

ISOSTURMIA Townsend, 1927, *Supplta ent.* **16** : 67. Type-species: ***Isosturmia inversa*** Townsend, 1927, by original designation. SUMATRA.

JANTHINOMYIA Brauer & Bergenstamm, 1893, *Denkschr. Akad. Wiss., Wien* **60** : 141. *Musc. Schiz.* **3** : 53. Type-species: ***Janthinomyia felderi*** Brauer & Bergenstamm, 1893, by original designation. INDIA.

JDANIA Enderlein, 1936. See *Idania*.

KAMBAITIMYIA Mesnil, 1953, *Bull. Annls Soc. r. ent. Belg.* **89** : 163. Type-species: ***Kambaitimyia carbonata*** Mesnil, 1953, by monotypy. BURMA.

KINABALUIA Malloch, 1935, *J. fed. Malay St. Mus.* **17** : 683. Type-species: ***Kinabaluia viridifulva*** Malloch, 1935, by original designation. BORNEO.

KORALLIOMYIA Mesnil, 1950, *Flieg. Palaearkt. Reg.* **64**g : 114. Type-species: ***Koralliomyia portentosa*** Mesnil, 1950, by original designation. INDIA.

KOSEMPOMYIA Villeneuve, 1932, *Bull. Annls Soc. r. ent. Belg.* **71** : 243. Type-species: ***Kosempomyia tibialis*** Villeneuve, 1932, by monotypy. FORMOSA.

KOSEMPOMYIELLA Baranov, 1934, *Encycl. ent.* Série B II, **7** : 165. Type-species: ***Kosempomyiella rufiventris*** Baranov, 1934 [= *Austrophasiopsis formosensis* Townsend, 1933], by original designation. FORMOSA.

KURINTJIMYIA Townsend, 1926, *Supplta ent.* **14** : 38. Type-species: ***Kurintjimyia jacobsoni*** Townsend, 1926, by original designation. SUMATRA.

KUWANIMYIA Townsend, 1916, *Proc. U.S. natn. Mus.* **51** : 319. Type-species: ***Kuwanimyia conspersa*** Townsend, 1916, by original designation. JAPAN.

LACCURA Enderlein, 1936, *Veröff. dt. Kolon.-u. Übersee-Mus. Bremen* **1** : 431. Type-species: ***Rutilia saturatissima*** Walker, 1861, by original designation. BATCHIAN (= BATJAN).

LASIOCALYPTER Malloch, 1930, *Proc. Linn. Soc. N.S.W.* **55** : 119. Type-species: ***Lasiocalypter flavohirta*** Malloch, 1930, by original designation. NEW SOUTH WALES.

LASIOCALYPTRINA Malloch, 1930, *Proc. Linn. Soc. N.S.W.* **55** : 122. Type-species: ***Lasiocalyptrina modesta*** Malloch, 1930, by original designation. VICTORIA.

LEIOSIA Wulp, 1893, *Tijdschr. Ent.* **36** : 185. Type-species: ***Leiosia flavisquama*** Wulp, 1893, by monotypy. JAVA.

LEIOSIOPSIS Townsend, 1927, *Suppl ta ent.* **16** : 62. Type-species: ***Leiosiopsis aristalis*** Townsend, 1927 [= *Isosturmia intermedia* Townsend, 1927], by original designation. SUMATRA.

LESKIOLA Mesnil, 1957, *Mém. Soc. r. ent. Belg.* **28** : 66. Type-species: ***Leskiola palpata*** Mesnil, 1957, by monotypy. BURMA.

LEVERELLA Baranov, 1934, *Vet. Arh.* **4** : 473. Type-species: ***Leverella institutiimperialis*** Baranov, 1934, by original designation. SOLOMON ISLANDS.

LOPHOSIOCYPTERA Townsend, 1927, *Suppl ta ent.* **16** : 59. Type-species: ***Lophosiocyptera lophosioides*** Townsend, 1927, by original designation. SUMATRA.

LOPHOSIODES Townsend, 1927, *Ent. Mitt.* **16** : 285. Type-species: ***Lophosiodes scutellatus*** Townsend, 1927, by original designation. FORMOSA.

LOPHOSIOPSIS Townsend, 1928, *Philipp. J. Sci.* **34** : 381. Type-species: ***Lophosiopsis costalis*** Townsend, 1928, by original designation. PHILIPPINE REPUBLIC.

LYPHOSIA Mesnil, 1957, *Mém. Soc. r. ent. Belg.* **28** : 56. Type-species: ***Lypha*** (***Lyphosia***) ***barbata*** Mesnil, 1957, by monotypy. JAPAN. (As subgenus of *Lypha* Robineau-Desvoidy, 1830).

MACREUTHERA Bezzi, 1925, *Proc. Linn. Soc. N.S.W.* **50** : 281. Type-species: ***Euthera skusei*** Bezzi, 1925, by original designation. QUEENSLAND. (As subgenus of *Euthera* Loew, 1866).

MACROCHLORIA Malloch, 1929, *Proc. Linn. Soc. N.S.W.* **54** : 326. Type-species: ***Macrochloria calliphorosoma*** Malloch, 1929 [= *Nemoraea nitidiventris* Macquart, 1851], by original designation. NEW SOUTH WALES.

MACROLOPHOSIA Brauer & Bergenstamm, 1893, *Denkschr. Akad. Wiss., Wien* **60** : 144. *Musc. Schiz.* **3** : 56. Type-species: ***Macrolophosia felderi*** Brauer & Bergenstamm, 1893, by monotypy. " O.-Indien " (? EAST INDIES or INDIA).

MACROPIA Malloch, 1930, *Proc. Linn. Soc. N.S.W.* **55** : 322. Type-species: ***Macropia rufiventris*** Malloch, 1930, by original designation. NEW SOUTH WALES.

MACROPODEXIA Townsend, 1933, *Jl N.Y. ent. Soc.* **40** : 462. Type-species: ***Dexia longipes*** Macquart, 1846, by original designation. TASMANIA.

MACROSOPHIA Townsend, 1933, *Jl N.Y. ent. Soc.* **40** : 459. Type-species: ***Macrosophia papua*** Townsend, 1933, by original designation. NEW GUINEA.

MACROZENILLIA Townsend, 1927, *Suppl ta ent.* **16** : 68. Type-species: ***Macrozenillia aurescens*** Townsend, 1927, by original designation. SUMATRA.

MAKILINGIMYIA Townsend, 1928, *Philipp. J. Sci.* **34** : 382. Type-species: ***Makilingimyia melanoptera*** Townsend, 1928, by original designation. PHILIPPINE REPUBLIC.

MALAIOCROCUTA Townsend, 1933, *Jl N.Y. ent. Soc.* **40** : 479. Type-species: ***Melanophora molitor*** Wiedemann, 1824, by original designation. EAST INDIES.

MALAISIMYIA Mesnil, 1953, *Bull. Annls Soc. r. ent. Belg.* **89** : 146. Type-species: ***Malaisimyia flavicoxa*** Mesnil, 1953, by monotypy. BURMA.

MALAYIA Malloch, 1926, *Philipp. J. Sci.* **31** : 510. Type-species: ***Malayia fuscinervis*** Malloch, 1926, by original designation. MALAYA.

MALAYOCYPTERA Townsend, 1926, *Suppl ta ent.* **14** : 31. Type-species: ***Malayocyptera munita*** Townsend, 1926, by original designation. SUMATRA.

MALAYODINERA Townsend, 1926, *Suppl ta ent.* **14** : 27. Type-species: ***Malayodinera montana*** Townsend, 1926, by original designation. SUMATRA.

MALAYODORIA Townsend, 1926, *Suppl ta ent.* **14** : 35. Type-species: ***Malayodoria fumipennis*** Townsend, 1926, by original designation. SUMATRA.

MALAYOMEDINA Townsend, 1926, *Suppl ta ent.* **14** : 20. Type-species: ***Malayomedina petiolata*** Townsend, 1926, by original designation. SUMATRA.

MALLOCHIOLA Strand, 1932, *Folia zool. hydrobiol.* **4** : 195. New name for *Delta* Malloch, 1930, preoccupied by *Delta* de Saussure, 1855 and *Delta* Saalmueller, 1891. (Invalid).

Name preoccupied by *Mallochiola* Bergroth, 1925 (Hemiptera); no replacement name required as *Deltomyza* Malloch, 1931 pre-dates *Mallochiola* Strand, 1932, as a new name for *Delta* Malloch, 1930.

MALLOCHOMACQUARTIA Townsend, 1934, *Jl N.Y. ent. Soc.* **42** : 247. Type-species: ***Macquartia vexata*** Hutton, 1901, by original designation. NEW ZEALAND.

MASICERELLA Gardner, 1940, *Indian J. Ent.* **2** : 178. Nomen nudum, unavailable.

Gardner (1940, *Indian J. Ent.* **2** : 178) published the name *Masicerella* in the binomen *Masicerella indistincta* which he attributed to Baranov; Baranov, however, never published this name. The specific name *indistincta* is available under Article II (g) (ii) of the *International Code of Zoological Nomenclature* and is attributable to Gardner, but the generic name *Masicerella* is not accompanied by a definition of the generic taxon and does not fulfil the requirements of Article 13 (a) of the *Code*; it is therefore an unavailable nomen nudum.

MEDINACEMYIA Townsend, 1928, *Philipp. J. Sci.* **34** : 377. Type-species: ***Medinacemyia sibuyana*** Townsend, 1928, by original designation. PHILIPPINE REPUBLIC.

MEDINELLA Malloch, 1938, *Trans. Proc. R. Soc. N.Z.* **68** : 234. Unavailable.

Malloch (1938, *Trans. Proc. R. Soc. N.Z.* **68** : 234–237) gave a generic description for *Medinella* and described four new originally included species from New Zealand. Malloch cited *Medinella unispinosa* n. sp. as type-species, but this is not one of the described species and remains a nomen nudum. *Medinella* is based on a nomen nudum, and the generic name is nomenclaturally unavailable.

MEDINODEXIA Townsend, 1927, *Suppl ta ent.* **16** : 57. Type-species: ***Medinodexia fulviventris*** Townsend, 1927, by original designation. SUMATRA.

MEDINOMYIA Mesnil, 1957, *Mém. Soc. r. ent. Belg.* **28** : 27. Type-species: ***Medinomyia canescens*** Mesnil, 1957, by monotypy. BURMA.

MEGISTOGASTROPSIS Townsend, 1916, *Ent. News* **27** : 178. Type-species: ***Megistogaster wallacei*** Brauer & Bergenstamm, 1889 [= *Dexia alulifera* Walker, 1861], by original designation. AMBOYNA.

MELANASOMYIA Malloch, 1935, *J. fed. Malay St. Mus.* **17** : 676. Type-species: ***Melanasomyia flavipalpis*** Malloch, 1935, by original designation. MALAYA.

MENEVILLEA Enderlein, 1936, *Veröff. dt. Kolon.-u. Übersee-Mus. Bremen* **1** : 416. Type-species: ***Rutilia pellucens*** Macquart, 1846, by original designation. AUSTRALIA.

MESEMBRIOMINTHO Townsend, 1916, *Can. Ent.* **48** : 158. Type-species: ***Mesembriomintho compressa*** Townsend, 1916 [= *Sumpigaster fasciatus* Macquart, 1855], by original designation. QUEENSLAND.

METOPOMINTHO Townsend, 1927, *Ent. Mitt.* **16** : 283. Type-species: ***Metopomintho sauteri*** Townsend, 1927, by original designation. FORMOSA.

METOPOSISYROPS Townsend, 1916, *Proc. U.S. natn. Mus.* **51** : 320. Type-species: ***Metoposisyrops oryzae*** Townsend, 1916, by original designation. JAVA.

MICROCARCELIA Baranov, 1934, *Trans. R. ent. Soc. Lond.* **82** : 400. Type-species: ***Carcelia septima*** Baranov, 1931, by original designation. FORMOSA.

MICROCEROMASIA Villeneuve, 1911, *Wien. ent. Ztg* **30** : 82. Type-species: ***Ceromasia sphenophori*** Villeneuve, 1911, by original designation. NEW GUINEA.

MICROHYSTRICIA Malloch, 1938, *Trans. Proc. R. Soc. N.Z.* **68** : 177. Type-species: ***Microhystricia gourlayi*** Malloch, 1938, by monotypy. NEW ZEALAND.

MICROPHYTOMYPTERA Townsend, 1927, *Ent. Mitt.* **16** : 287. Type-species: ***Microphytomyptera minuta*** Townsend, 1927, by original designation. FORMOSA.

MICRORUTILIA Townsend, 1915, *Proc. biol. Soc. Wash.* **28** : 23. Type-species: ***Rutilia minor*** Macquart, 1846, by original designation. TASMANIA, NEW SOUTH WALES.

MICROTROPESA Macquart, 1846, *Mém. Soc. Sci. Agric. Lille* **1844** : 313. *Dipt. exot.* Suppl. **1** : 185. Type-species: ***Musca sinuata*** Donovan, 1798, by monotypy. AUSTRALIA.

MINTHOCYPTERA Townsend, 1926, *Supplta ent.* **14** : 31. Type-species: ***Minthocyptera malaya*** Townsend, 1926, by original designation. SUMATRA.

MOLLIOPSIS Townsend, 1933, *Jl N.Y. ent. Soc.* **40** : 470. Type-species: ***Mollia malayana*** Townsend, 1926, by original designation. SUMATRA.

MONOLEPTOPHAGA Baranov, 1938, *Bull. ent. Res.* **29** : 411. Type-species: ***Monoleptophaga caldwelli*** Baranov, 1938, by original designation. QUEENSLAND.

MONTANARTURIA Miller, 1945, *Proc. R. ent. Soc. Lond.* (B) **14** : 72. Type-species: ***Arthuria dimorpha*** Malloch, 1938. New name for *Arthuria* Malloch, 1938, preoccupied by *Arthuria* Dall, 1881.

MYCTEROMYIA Mesnil, 1950, *Flieg. Palaearkt. Reg.* **64**g : 107. Type-species: ***Mycteromyia laetifica*** Mesnil, 1950, by original designation. NEW GUINEA.

Name preoccupied by *Mycteromyia* Philippi, 1865 (Diptera), see *Mycteromyiella* Mesnil, 1965.

MYCTEROMYIELLA Mesnil, 1965, *Bull. Soc. ent. Fr.* **70** : 232. Type-species: ***Mycteromyia laetifica*** Mesnil, 1950. New name for *Mycteromyia* Mesnil, 1950, preoccupied by *Mycteromyia* Philippi, 1865.

MYIOFIJIA Baranov, 1934, *Vet. Arh.* **4** : 478. Type-species: ***Myiofijia bezziana*** Baranov, 1934, by original designation. FIJI ISLANDS.

MYIOTRIXA Brauer & Bergenstamm, 1893, *Denkschr. Akad. Wiss., Wien* **60** : 96. *Musc. Schiz.* **3** : 8. Type-species: ***Myiotrixa prosopina*** Brauer & Bergenstamm, 1893, by original designation. NORTHERN AUSTRALIA.

MYOBIOMIMA Townsend, 1926, *Supplta ent.* **14** : 22. Type-species: ***Myobiomima longimana*** Townsend, 1926, by original designation. SUMATRA.

MYXOCARCELIA Baranov, 1934, *Trans. R. ent. Soc. Lond.* **82** : 398. Type-species: ***Carcelia hirsuta*** Baranov, 1931, by original designation. FORMOSA.

NEODUVAUCELIA Malloch, 1931, *Ann. Mag. nat. Hist.* (10) **7** : 319. Type-species: ***Neoduvaucelia aenescens*** Malloch, 1931, by original designation. MALAYA.

NEOERYTHRONYCHIA Malloch, 1932, *Rec. Canterbury Mus.* **3** : 449. Type-species: ***Neoerythronychia hirta*** Malloch, 1932, by original designation. NEW ZEALAND.

NEOMEDINA Malloch, 1935, *Insects Samoa*, VI, Dipt. **9** : 362. Type-species: ***Neomedina atripennis*** Malloch, 1935, by original designation. SAMOA.

NEOPHASIA Brauer & Bergenstamm, 1893, *Denkschr. Akad. Wiss., Wien* **60** : 100. *Musc. Schiz.* **3** : 12. Type-species: ***Neophasia picta*** Brauer & Bergenstamm, 1893, by original designation. WESTERN AUSTRALIA.

Name preoccupied by *Neophasia* Behr, 1869 (Lepidoptera), see *Euphasia* Townsend, 1908, and *Neximyia* n. n.

NEOPHRYXE Townsend, 1916, *Proc. U.S. natn. Mus.* **51** : 318. Type-species: ***Neophryxe psychidis*** Townsend, 1916, by original designation. JAPAN.

NEOPLECTOPS Malloch, 1930, *J. fed. Malay St. Mus.* **16** : 147. Type-species: ***Neoplectops nudibasis*** Malloch, 1930, by original designation. MALAYA.

NEORUTILIA Malloch, 1936, *Proc. Linn. Soc. N.S.W.* **61** : 17. Type-species: ***Rutilia*** (***Neorutilia***) ***simplex*** Malloch, 1936, by original designation. QUEENSLAND. (As subgenus of *Rutilia* Robineau-Desvoidy, 1830).

NEOTACHINA Malloch, 1938, *Trans. Proc. R. Soc. N.Z.* **68** : 240. Type-species: ***Neotachina obtusa*** Malloch, 1938, by original designation. NEW ZEALAND.

NEOTRYPHERA Malloch, 1938, *Trans. Proc. R. Soc. N.Z.* **68** : 217. Type-species: ***Neotryphera atra*** Malloch, 1938, by original designation. NEW ZEALAND.

NEXIMYIA **n. n.** for *Euphasia* Townsend, 1908, preoccupied by *Euphasia* Stephens, 1830. Type-species: ***Neophasia picta*** Brauer & Bergenstamm, 1893.

Euphasia Townsend was proposed as a replacement name for the preoccupied *Neophasia* Brauer & Bergenstamm, but *Euphasia* Townsend is itself preoccupied: *Neximyia* n. n., here proposed as a replacement name for *Euphasia* Townsend, is therefore the valid name for *Neophasia* Brauer & Bergenstamm.

NOTHYPOSTENA Mesnil, 1957, *Mém. Soc. r. ent. Belg.* **28** : 63. Type-species: ***Nothypostena aberrans*** Mesnil, 1957, by monotypy. BURMA.

OCCISOR Hutton, 1901, *Trans. N.Z. Inst.* **33** : 52. Type-species: ***Occisor inscitus*** Hutton, 1901, by subsequent designation of Townsend, 1916, *Insecutor Inscit. menstr.* **4** : 8. NEW ZEALAND.

OCHROMEIGENIA Townsend, 1919, *Proc. U.S. natn. Mus.* **56** : 578. Type-species: ***Ochromeigenia ormioides*** Townsend, 1919 [= *Hamaxia incongrua* Walker, 1860], by original designation. JAVA.

OCHROPHASIA Townsend, 1927, *Philipp. J. Sci.* **33** : 288. Type-species: ***Ochrophasia atripennis*** Townsend, 1927, by original designation. PHILIPPINE REPUBLIC.

OCHROPLEURUM Macquart, 1851, *Mém. Soc. Sci. Agric. Lille* **1850** : 184. *Dipt. exot.* Suppl. **4** : 211. Type-species: ***Ochropleurum javanum*** Macquart, 1851 [= *Dexia macropus* Wiedemann, 1830], by monotypy. JAVA.

OCYPTEROPSIS Townsend, 1916, *Proc. U.S. natn. Mus.* **49** : 630. Type-species: ***Ocyptera flavifrons*** Macquart, 1851, by original designation. TASMANIA (probably in error for NEW SOUTH WALES).

OESTROCARA Townsend, 1935, *Ent. News* **46** : 104. Type-species: ***Semisuturia nitidiventris*** Malloch, 1927, by original designation. MALAYA.

OPSOCYPTERA Townsend, 1927, *Philipp. J. Sci.* **33** : 284. Type-species: ***Opsocyptera optima*** Townsend, 1927, by original designation. PHILIPPINE REPUBLIC.

OPSOPHANA Townsend, 1916, *Can. Ent.* **48** : 153. Type-species: ***Masicera rufifacies*** Macquart, 1847, by original designation. TASMANIA.

OPSOPHASIOPS Townsend, 1915, *Proc. biol. Soc. Wash.* **28** : 22. Type-species: ***Myiophasia flava*** Coquillett, 1900, by original designation. TASMANIA.

Coquillett (1900, *Proc. Linn. Soc. N.S.W.* **25** : 390) cited West Australia as the type-locality of *Myiophasia flava* in the original description, but the type-material (in Washington) is labelled Tasmania. Aldrich (1922, *Proc. U.S. natn. Mus.* **62** (11) : 5) has noted the discrepancy and Townsend (1938, *Man. Myiol.* **7** : 217) accepts Tasmania.

ORECTOCERA Wulp, 1881, *Dipt. Sumatra-Exp.*: 39. Type-species: ***Orectocera micans*** Wulp, 1881, by monotypy. SUMATRA.

ORECTOCERINA Malloch, 1924, *Ann. Mag. nat. Hist.* (9) **14** : 521. Type-species: ***Orectocerina atratula*** Malloch, 1924 [= *Trischidocera sauteri* Villeneuve, 1915], by original designation. MALAYA.

ORIENTODORIA Townsend, 1933, *Jl N.Y. ent. Soc.* **40** : 477. Type-species: ***Tachina orientalis*** Wiedemann, 1830, by original designation. EAST INDIES.

ORILLIOPSIS Townsend, 1928, *Philipp. J. Sci.* **34** : 396. Type-species: ***Orilliopsis orientalis*** Townsend, 1928, by original designation. PHILIPPINE REPUBLIC.

ORMIOMINDA Paramonov, 1955, *Ann. Mag. nat. Hist.* (12) **8** : 125. Type-species: ***Ormiominda rieki*** Paramonov, 1955, by original designation. QUEENSLAND.

OXYDEXIOPS Townsend, 1927, *Philipp. J. Sci.* **33** : 289. Type-species: ***Oxydexiops uramyoides*** Townsend, 1927, by original designation. PHILIPPINE REPUBLIC.

OXYPHYLLOMYIA Villeneuve, 1937, *Bull. Mus. r. Hist. nat. Belg.* **13** (34) : 11. Type-species: ***Oxyphyllomyia cordylurina*** Villeneuve, 1937, by monotypy. CHINA (SZECHWAN).

OXYRUTILIA Townsend, 1926, *Supplta ent.* **14** : 30. Type-species: ***Oxyrutilia jacobsoni*** Townsend, 1926, by original designation. SUMATRA.

PALEXORISTA Townsend, 1921, *Insecutor Inscit. menstr.* **9** : 134. Type-species: ***Tachina succini*** Giebel, 1862 [= *Masicera solennis* Walker, 1859], by original designation. Probably EAST INDIES.

This genus is based on a specimen in copal, probably of East Indian origin, and at the time of description erroneously supposed to have been a fossil in Baltic amber. See Crosskey (1966, *Proc. R. ent. Soc. Lond.* (B) **35** : 133).

PALIA Curran, 1927, *Ent. Mitt.* **16** : 443. Type-species: ***Palia aureocauda*** Curran, 1927, by original designation. QUEENSLAND.

PALIANA Curran, 1927, *Ent. Mitt.* **16** : 445. Type-species: ***Paliana basalis*** Curran, 1927, by original designation. QUEENSLAND.

PALPINA Malloch, 1927, *Ann. Mag. nat. Hist.* (9) **20** : 423. Type-species: ***Palpina scutellaris*** Malloch, 1927, by original designation. MALAYA.

PALPOCYPTERA Townsend, 1927, *Philipp. J. Sci.* **33** : 283. Type-species: ***Palpocyptera pulchra*** Townsend, 1927, by original designation. PHILIPPINE REPUBLIC.

PALPOSTOMA Robineau-Desvoidy, 1830, *Mém. prés. div. Sav. Acad. Sci. Inst. Fr.* **2** : 429. Type-species: ***Palpostoma testacea*** Robineau-Desvoidy, 1830, by monotypy. AUSTRALIA.

PALPOSTOMOTRIXA Townsend, 1927, *Ent. Mitt.* **16** : 277. Type-species: ***Palpostomotrixa paradoxa*** Townsend, 1927, by original designation. CEYLON.

PANCALA Enderlein, 1936, *Veröff. dt. Kolon.-u. Übersee-Mus. Bremen* **1** : 422. Type-species: ***Formosia callipygos*** Gerstaecker, 1860, by original designation. NEW GUINEA.

PARABRACHELIA Townsend, 1916, *Can. Ent.* **48** : 159. Type-species: ***Masicera rufipes*** Macquart, 1847, by original designation. TASMANIA.

PARAGONIA Mesnil, 1950, *Flieg. Palaearkt. Reg.* **64**g : 106. Type-species: ***Paragonia portentosa*** Mesnil, 1950, by original designation. WESTERN AUSTRALIA.

PARALOPHOSIA Brauer & Bergenstamm, 1889, *Denkschr. Akad. Wiss., Wien* **56** : 164. *Musc. Schiz.* **1** : 96. Type-species: ***Ocyptera imbuta*** Wiedemann, 1819, by original designation. INDIA.

Brauer & Bergenstamm (*loc. cit.*) record the locality as " Ostindien ", but the lectotype of *Ocyptera imbuta* Wiedemann is almost certainly from India (see Crosskey, 1966, *Ann. Mag. nat. Hist.* (13) **8** : 667).

PARAMPHIBOLIA Brauer & Bergenstamm, 1891, *Denkschr. Akad. Wiss., Wien* **58** : 389. *Musc. Schiz.* **2** : 85. Type-species: ***Rutilia assimilis*** Macquart, 1851, by monotypy. AUSTRALIA.

PARATROPEZA Paramonov, 1963, *Ann. Mag. nat. Hist.* (13) **6** : 577. Type-species: ***Paratropeza flavibasis*** Paramonov, 1963, by original designation. NEW GUINEA.

PAREUPOGONA Townsend, 1916, *Can. Ent.* **48** : 157. Type-species: ***Masicera oblonga*** Macquart, 1847, by original designation. TASMANIA.

PAROPSIVORA Malloch, 1934, *Proc. Linn. Soc. N.S.W.* **59** : 7. Type-species: ***Paropsivora grisea*** Malloch, 1934, by original designation. AUSTRALIAN CAPITAL TERRITORY.

PENTATOMOPHAGA de Meijere, 1917, *Tijdschr. Ent.* **60** : 246. Type-species: ***Pentatomophaga bicincta*** de Meijere, 1917, by monotypy. JAVA.

PENTHOSIOSOMA Townsend, 1926, *Philipp. J. Sci.* **29** : 538. Type-species: ***Penthosiosoma pictipennis*** Townsend, 1926, by original designation. PENANG.

PEREMPTOR Hutton, 1901, *Trans. N.Z. Inst.* **33** : 56. Type-species: ***Peremptor egmonti*** Hutton, 1901, by subsequent designation of Townsend, 1916, *Insecutor Inscit. menstr.* **4** : 8. NEW ZEALAND.

PERIGYMNOSOMA Villeneuve, 1929, *Bull. Annls Soc. r. ent. Belg.* **69** : 68. Type-species: ***Perigymnosoma globulum*** Villeneuve, 1929, by monotypy. FORMOSA.

PERILOPHOSIA Villeneuve, 1927, *Revue zool. afr.* **15** : 221. Type-species: ***Perilophosia ocypterina*** Villeneuve, 1927, by monotypy. FORMOSA.

PERRISSINA Malloch, 1938, *Trans. Proc. R. Soc. N.Z.* **68** : 182. Type-species: ***Perrissina crocea*** Malloch, 1938, by original designation. NEW ZEALAND.

PERRISSINOIDES Dugdale, 1961, *Trans. R. Soc. N.Z., Zool.* **1** : 242. Type-species: ***Perrissinoides cerambycivorae*** Dugdale, 1961, by original designation. NEW ZEALAND.

PHAONIELLA Malloch, 1938, *Trans. Proc. R. Soc. N.Z.* **68** : 216. Type-species: ***Phaoniella bifida*** Malloch, 1938, by original designation. NEW ZEALAND.

PHASIODEXIA Townsend, 1925, *Ent. Mitt.* **14** : 250. Type-species: ***Phasiodexia flavida*** Townsend, 1925, by original designation. SUMATRA.

PHASIOORMIA Townsend, 1933, *Jl N.Y. ent. Soc.* **40** : 447. Type-species: ***Phasioormia pallida*** Townsend, 1933, by original designation. SINGAPORE.

PHILIPPODEXIA Townsend, 1926, *Philipp. J. Sci.* **29** : 533. Type-species: ***Philippodexia longipes*** Townsend, 1926, by original designation. PHILIPPINE REPUBLIC.

PHILIPPODORIA Townsend, 1928, *Philipp. J. Sci.* **34** : 391. Type-species: ***Philippodoria fasciata*** Townsend, 1928, by original designation. PHILIPPINE REPUBLIC.

PHILIPPOFORMOSIA Townsend, 1927, *Philipp. J. Sci.* **33** : 282. Type-species: ***Philippoformosia splendida*** Townsend, 1927, by original designation. PHILIPPINE REPUBLIC.

PHILIPPOLOPHOSIA Townsend, 1928, *Philipp. J. Sci.* **34** : 384. Type-species: ***Philippolophosia ornata*** Townsend, 1928, by original designation. PHILIPPINE REPUBLIC.

PHILOTRICHOSTYLUM Townsend, 1933, *Jl N.Y. ent. Soc.* **40** : 460. Type-species: ***Trichostylum fasciatum*** Townsend, 1928, by original designation. PHILIPPINE REPUBLIC.

PHORCIDELLA Mesnil, 1947, *Encycl. ent.* Série B II, **10** : 42. Type-species: ***Eutachina basalis*** Baranov, 1932, by original designation. FORMOSA.

PHORINIOPHYLAX Townsend, 1927, *Suppl. ta ent.* **16** : 62. Type-species: ***Phoriniophylax phoeda*** Townsend, 1927, by original designation. SUMATRA.

PHOROCEROSOMA Townsend, 1927, *Suppl. ta ent.* **16** : 61. Type-species: ***Phorocerosoma forte*** Townsend, 1927 [= *Masicera vicaria* Walker, 1857], by original designation. SUMATRA.

PHOROCEROSOMA Malloch, 1929, *Proc. Linn. Soc. N.S.W.* **54** : 327. Type-species: ***Phorocerosoma setiventris*** Malloch, 1929, by original designation. QUEENSLAND.

Name preoccupied by *Phorocerosoma* Townsend, 1927 (Diptera), see *Phorocerostoma* Malloch, 1930.

PHOROCEROSTOMA Malloch, 1930, *Proc. Linn. Soc. N.S.W.* **55** : 326. Type-species: ***Phorocerosoma setiventris*** Malloch, 1929. New name for *Phorocerosoma* Malloch, 1929, preoccupied by *Phorocerosoma* Townsend, 1927.

PHRYNACTIA Townsend, 1926, *Supplta ent.* **14** : 34. Type-species: ***Phrynactia petiolata*** Townsend, 1926, by original designation. SUMATRA.

PHRYXOSTURMIA Townsend, 1927, *Supplta ent.* **16** : 68. Type-species: ***Phryxosturmia jacobsoni*** Townsend, 1927 [= *Blepharella lateralis* Macquart, 1851], by original designation. SUMATRA.

PHYTOROPHAGA Bezzi, 1923, *Treubia* **3** : 411. Type-species: ***Phytorophaga ventralis*** Bezzi, 1923, by original designation. JAVA.

PILIMYIA Malloch, 1930, *Proc. Linn. Soc. N.S.W.* **55** : 329. Type-species: ***Pilimyia lasiophthalma*** Malloch, 1930, by original designation. NEW SOUTH WALES.

PLAGIODEROPHAGUS Baranov, 1938, *Bull. ent. Res.* **29** : 412. Type-species: ***Plagioderophagus niger*** Baranov, 1938, by original designation. INDIA.

PLAGIOMYIA Curran, 1927, *Ent. Mitt.* **16** : 442. Type-species: ***Calcager turbidum*** Hutton, 1901, by original designation. NEW ZEALAND.

PLATERYCIA Baranov, 1936, *Ann. Mag. nat. Hist.* (10) **17** : 110. Type-species: ***Platerycia compressa*** Baranov, 1936, by original designation. FORMOSA.

PLATYTACHINA Malloch, 1938, *Trans. Proc. R. Soc. N.Z.* **68** : 210. Type-species: ***Platytachina major*** Malloch, 1938, by original designation. NEW ZEALAND.

PLATYTAINIA Macquart, 1851, *Mém. Soc. Sci. Agric. Lille* **1850** : 178. *Dipt. exot.* Suppl. **4** : 205. Type-species: ***Platytainia maculata*** Macquart, 1851, by monotypy. TASMANIA (probably in error for NEW SOUTH WALES).

PLESIOCYPTERA Brauer & Bergenstamm, 1893, *Denkschr. Akad. Wiss., Wien* **60** : 144. *Musc. Schiz.* **3** : 56. Type-species: ***Ocyptera bicolor*** Wiedemann, 1819, by monotypy. INDIA.

Brauer & Bergenstamm (loc. cit.) record the locality as " O. Ind.", suggesting East Indies, but the lectotype of *Ocyptera bicolor* Wiedemann is almost certainly from India (see Crosskey, 1966, *Ann. Mag. nat. Hist.* (13) **8** : 666).

PLETHOCHAETIGERA Malloch, 1938, *Trans. Proc. R. Soc. N. Z.* **68** : 191. Type-species: ***Plethochaetigera fenwicki*** Malloch, 1938, by original designation. NEW ZEALAND.

PODOMYIA Brauer & Bergenstamm, 1889, *Denkschr. Akad. Wiss., Wien* **56** : 96. *Musc. Schiz.* **1** : 28. Type-species: ***Eurigaster setosa*** Doleschall, 1858 [= *Blepharella lateralis* Macquart, 1851], by original designation. AMBOYNA.

POGONAGALMIA Enderlein, 1936, *Veröff. dt. Kolon.-u. Übersee-Mus. Bremen* **1** : 435. Type-species: ***Rutilia hirticeps*** Malloch, 1929, by original designation. NEW SOUTH WALES.

POLYCHAETA Macquart, 1851, *Mém. Soc. Sci. Agric. Lille* **1850** : 154. *Dipt. exot.* Suppl. **4** : 181. Type-species: ***Polychaeta nigra*** Macquart, 1851, by monotypy. TASMANIA (probably in error for NEW SOUTH WALES).

POLYGASTROPTERYX Mesnil, 1953, *Bull. Annls Soc. r. ent. Belg.* **89** : 161. Type-species: ***Polygastropteryx bicoloripes*** Mesnil, 1953, by monotypy. BURMA.

PROCEROMYIA Mesnil, 1957, *Mém. Soc. r. ent. Belg.* **28** : 35. Type-species: ***Ceromyia*** (***Proceromyia***) ***macronychia*** Mesnil, 1957, by monotypy. JAPAN. (As subgenus of *Ceromya* Robineau-Desvoidy, 1830).

PRODEGEERIA Brauer & Bergenstamm, 1894, *Denkschr. Akad. Wiss., Wien* **61** : 617. *Musc. Schiz.* **4** : 81. Type-species : ***Prodegeeria javana*** Brauer & Bergenstamm, 1894, by monotypy. JAVA.

PRODIAPHANIA Townsend, 1927, *Ent. News* **38** : 159. Type-species: ***Diaphania testacea*** Macquart, 1843. New name for *Diaphania* Macquart, 1843, preoccupied by *Diaphania* Huebner, 1818.

PROFERIA Mesnil, 1953, *Bull. Annls Soc. r. ent. Belg.* **89** : 149. Unavailable, no fixation of a type-species.

Proferia was described with two originally included species, neither of which was fixed as type-species; it is invalid under Article 13(b) of the *International Code of Zoological Nomenclature*.

PROHYPOTACHINA Townsend, 1933, *Jl N.Y. ent. Soc.* **40** : 464. Type-species: ***Prohypotachina rutilioides*** Townsend 1933, by original designation. NORTH VIETNAM (TONKING).

PROMEDINA Mesnil, 1957, *Mém. Soc. r. ent. Belg.* **28** : 26. Type-species: ***Promedina japonica*** Mesnil, 1957, by original designation. JAPAN.

PROMINTHO Townsend, 1926, *Supplta ent.* **14** : 23. Type-species: ***Promintho sungayana*** Townsend, 1926, by original designation. SUMATRA.

PROPARATHELAIRA Townsend, 1928, *Philipp. J. Sci.* **34** : 378. Type-species: ***Proparathelaira plumosa*** Townsend, 1928, by original designation. PHILIPPINE REPUBLIC.

PROPHORICHAETA Townsend, 1928, *Philipp. J. Sci.* **34** : 390. Type-species: ***Prophorichaeta philippina*** Townsend, 1928, by original designation. PHILIPPINE REPUBLIC.

PRORIEDELIA Mesnil, 1953, *Bull. Annls Soc. r. ent. Belg.* **89** : 164. Type-species: ***Proriedelia petiolata*** Mesnil, 1953, by monotypy. BURMA.

PROSCISSIO Hutton, 1901, *Trans. N.Z. Inst.* **33** : 54. Type-species: ***Proscissio montana*** Hutton, 1901, by subsequent designation of Townsend, 1916, *Insecutor Inscit. menstr.* **4** : 8. NEW ZEALAND.

PROSENINA Malloch, 1930, *Proc. Linn. Soc. N.S.W.* **55** : 116. Type-species: ***Prosenina nicholsoni*** Malloch, 1930, by original designation. NEW SOUTH WALES.

PROSENOSOMA Malloch, 1938, *Trans. Proc. R. Soc. N.Z.* **68** : 189. Type-species: ***Prosenosoma greyi*** Malloch, 1938, by original designation. NEW ZEALAND.

PROSENOSTOMA Townsend, 1932, *Ann. Mag. nat. Hist.* (10) **9** : 39. Type-species: ***Senostoma flavipes*** Brauer & Bergenstamm, 1889, by original designation. WESTERN AUSTRALIA.

PROSHELIOMYIA Brauer & Bergenstamm, 1891, *Denkschr. Akad. Wiss., Wien* **58** : 375. *Musc. Schiz.* **2** : 71. Type-species: ***Prosheliomyia nietneri*** Brauer & Bergenstamm, 1891, by monotypy. CEYLON.

PROSOPHIA Townsend, 1927, *Supplta ent.* **16** : 58. Type-species: ***Prosophia kloofia*** Townsend, 1927, by original designation. SUMATRA.

PROSOPODOPSIS Townsend, 1926, *Philipp. J. Sci.* **29** : 542. Type-species: ***Tachina fasciata*** Wiedemann, 1830, by original designation. MACAO.

PROSOPOFRONTINA Townsend, 1926, *Supplta ent.* **14** : 33. Type-species: ***Prosopofrontina pulchra*** Townsend, 1926, by original designation. SUMATRA.

PROSTURMIA Townsend, 1927, *Supplta ent.* **16** : 69. Type-species: ***Prosturmia profana*** Townsend, 1927 [= *Masicera solennis* Walker, 1859], by original designation. SUMATRA.

PROTOHYSTRICIA Malloch, 1929, *Proc. Linn. Soc. N.S.W.* **54** : 341. Type-species: ***Hystricia pachyprocta*** Nowicki, 1875 [= *Hystricia orientalis* Schiner, 1868], by original designation. NEW ZEALAND.

PROTOMEIGENIA Townsend, 1916, *Can. Ent.* **48** : 156. Type-species: ***Protomeigenia aurea*** Townsend, 1916, by original designation. NEW SOUTH WALES.

PROTONEMORAEA Baranov, 1935, *Vet. Arh.* **5** : 556. Type-species: ***Protonemoraea japanica*** Baranov, 1935, by original designation. JAPAN.

PSARONIA Enderlein, 1936, *Veröff. dt. Kolon.-u. Übersee-Mus. Bremen* **1** : 414. Type-species: ***Psaronia bisetosa*** Enderlein, 1936, by original designation. WESTERN AUSTRALIA.

PSARONIELLA Enderlein, 1936, *Veröff. dt. Kolon.-u. Übersee-Mus. Bremen* **1** : 417. Type-species: ***Rutilia castanipes*** Bigot, 1880, by original designation. AUSTRALIA.

PSEUDACTIA Malloch, 1930, *J. fed. Malay St. Mus.* **16** : 124. Type-species: ***Actia*** (***Pseudactia***) ***hirticeps*** Malloch, 1930, by monotypy. MALAYA. (As subgenus of *Actia* Robineau-Desvoidy, 1830).

PSEUDOBRULLAEA Mesnil, 1957, *Mém. Soc. r. ent. Belg.* **28** : 74. Type-species: ***Pseudobrullaea aberrans*** Mesnil, 1957, by monotypy. BURMA.

PSEUDOCYPTERA Brauer & Bergenstamm, 1893, *Denkschr. Akad. Wiss., Wien* **60** : 143. *Musc. Schiz.* **3** : 55. Type-species: ***Pseudocyptera obscura*** Brauer & Bergenstamm, 1893, by monotypy. INDIA.

Brauer & Bergenstamm (loc. cit.) cite the locality as " O. Ind.", but India and not East Indies is the more probable type-locality.

PSEUDOFORMOSIA Brauer & Bergenstamm, 1889, *Denkschr. Akad. Wiss., Wien* **56** : 126. *Musc. Schiz.* **1** : 58. Type-species: ***Formosia moneta*** Gerstaecker, 1860, by monotypy. NEW GUINEA.

PSEUDOKEA Townsend, 1928, *Philipp. J. Sci.* **34** : 393. Type-species: ***Pseudokea neowinthemioides*** Townsend, 1928, by original designation. PHILIPPINE REPUBLIC.

PSEUDOPALPOSTOMA Townsend, 1926, *Philipp. J. Sci.* **29** : 533. Type-species: ***Palpostoma desvoidyi*** Aldrich, 1922, by original designation. QUEENSLAND.

PSEUDORECTOCERA Townsend, 1928, *Philipp. J. Sci.* **34** : 385. Type-species: ***Pseudorectocera albifacies*** Townsend, 1928 [= *Tachina beelzebul* Wiedemann, 1830], by original designation. PHILIPPINE REPUBLIC.

PSEUDOSERVILLIA Townsend, 1916, *Ent. News* **27** : 178. Type-species: ***Echinomyia flavopilosa*** Bigot, 1888, by original designation. JAVA.

PSEUDOTRICHOPODA Malloch, 1933, *Proc. Linn. Soc. N.S.W.* **58** : 77. Type-species: ***Pseudotrichopoda varipes*** Malloch, 1933 [= *Saralba ocypteroides* Walker, 1865], by original designation. QUEENSLAND.

PYGIDIA Malloch, 1930, *Proc. Linn. Soc. N.S.W.* **55** : 330. Type-species: ***Pygidia rufolateralis*** Malloch, 1930, by original designation. NEW SOUTH WALES.

Name preoccupied by *Pygidia* Mulsant & Rey, 1861 (Coleoptera), see *Pygidimyia* n. n.

PYGIDIMYIA **n. n.** for *Pygidia* Malloch, 1930, preoccupied by *Pygidia* Mulsant & Rey, 1861. Type-species: ***Pygidia rufolateralis*** Malloch, 1930.

PYGOCALCAGER Townsend, 1935, *Ent. News* **46** : 215. Type-species: ***Calcager humeratum*** Hutton, 1901, by original designation. NEW ZEALAND.

QUADRA Malloch, 1929, *Proc. Linn. Soc. N.S.W.* **54** : 320. Type-species: ***Quadra ornata*** Malloch, 1929, by original designation. WESTERN AUSTRALIA.

RHAPHIS Wulp, 1885, *Tijdschr. Ent.* **28** : 199. Type-species: ***Rhaphis elongata*** Wulp, 1885, by monotypy. CEYLON.

RHINAPLOMYIA Mesnil, 1955, *Flieg. Palaearkt. Reg.* **64g** : 441. Type-species: ***Carcelia nasuta*** Villeneuve, 1937, by original designation. CHINA (SZECHWAN).

RHINOMYOBIA Brauer & Bergenstamm, 1893, *Denkschr. Akad. Wiss., Wien* **60** : 140. *Musc. Schiz.* **3** : 52. Type-species: ***Rhinomyobia australis*** Brauer & Bergenstamm, 1893, by monotypy. AUSTRALIA.

RHINOMYODES Townsend, 1933, *Jl N.Y. ent. Soc.* **40** : 474. Type-species: ***Rhinomyodes emporomyioides*** Townsend, 1933, by original designation. FORMOSA.

RHYNCHIODEXIA Bigot, 1885, *Bull. Soc. ent. Fr.* **1885** : xi. Type-species: ***Rhynchiodexia tenuipes*** Bigot, 1885, by monotypy. New Caledonia.

RUTILIA Robineau-Desvoidy, 1830, *Mém. prés. div. Sav. Acad. Sci. Inst. Fr.* **2** : 319. Type-species: ***Tachina vivipara*** Fabricius, 1805, by PRESENT DESIGNATION (see discussion). Probably Australia (Insulis maris pacifici).

The citations of a type-species for *Rutilia* Robineau-Desvoidy until now existing in the literature are invalid under the *International Code of Zoological Nomenclature* (for reasons discussed further below) as type-designations for this genus, and *Tachina vivipara* Fabricius, 1805, is therefore here designated as type-species.

The mention of the single species *Rutilia desvoidyi* Guérin-Méneville, 1843, in *Rutilia* by Brauer & Bergenstamm (1889, *Denkschr. Akad. Wiss., Wien* **56** : 152) does not constitute type-fixation since this species was cited only as an example of the genus (Opinion 98 of the International Commission on Zoological Nomenclature) and is not an originally included nominal species. To fix a type-species Townsend (1916, *Insecutor Inscit. menstr.* **4** : 8) designated " *Rutilia vivipara* RD ", and this is the earliest type-designation for *Rutilia* (which has four originally included nominal species, one of which is *Tachina vivipara* Fabricius) : this designation is however invalid on two grounds. Townsend's designation is not amplified by any statement other than " *Rutilia vivipara* RD " and it is therefore not clear whether this is intended to mean the species supposedly misidentified by Robineau-Desvoidy as *vivipara* Fabricius or whether Townsend meant the true *vivipara* Fabricius ; the designation is made in an ambiguous manner and is invalid under Article 67(c) of the *Code*. If, as seems probable from Townsend's later work, he meant *vivipara* in the sense of Robineau-Desvoidy, not of Fabricius, the designation is also invalid on the ground that " *Rutilia vivipara* RD " is not an originally included nominal species: a nominal species is a named species objectively defined by its type-specimen (*Code*, Glossary : 152), and the only species named *vivipara* and mentioned by Robineau-Desvoidy is *Tachina vivipara* Fabricius defined by the Fabrician type-material (now lost); there is no nominal species *Rutilia vivipara* RD and the designation of Townsend is therefore an invalid subsequent designation (Article 69 (a)).

Guérin-Méneville (1843, *Rev. Zool.* **1843** : 264), on the basis of discrepancies between the descriptions of Fabricius and Robineau-Desvoidy, considered that the latter author had misidentified *Tachina vivipara* Fabricius, and that the species actually seen by Robineau-Desvoidy was undescribed when Robineau-Desvoidy described *Rutilia*. Guérin-Méneville (1843, *Rev. Zool.* **1843** : 269) himself described the species supposedly misidentified by Robineau-Desvoidy as *Rutilia desvoidyi* Guérin-Méneville, and Engel (1925, *Zool. Jb.* **50** : 361) and Townsend (1936, *Man. Myiol.* **3** : 153) have cited *Rutilia desvoidyi* G.-M. as the type-species of *Rutilia*; but *desvoidyi* is not an originally included nominal species and neither of these citations is a valid type-designation.

Enderlein (1936, *Veröff. dt. Kolon.-u. Übersee-Mus. Bremen* **1** : 428–429) and Townsend (1938, *Man. Myiol.* **7** : 422) both cited *Rutilia desvoidyi* Guérin-Méneville as the type-species of *Rutilia* but made it clear at the same time that they considered it to be the same as *Rutilia vivipara* Robineau-Desvoidy, nec Fabricius; however this does not provide a valid type-designation for *Rutilia* under Article 69 (a) (iv) since *Rutilia vivipara* Robineau-Desvoidy is not a nominal species (see above). Article 70 (b) on deliberate use of misidentification applies only to new nominal genera established by the designator and is not germane to the present case (which is not one requiring a Commission ruling under Article 70).

In the absence of a previous valid type-designation I am here designating *Tachina vivipara* Fabricius, 1805, as the type-species of *Rutilia* Robineau-Desvoidy. This selection does not affect the generic concept of *Rutilia*, but it should be noted that the generic name *Stiraulax* Enderlein, 1936, becomes a junior objective synonym of *Rutilia* since it is also based on *vivipara* Fabricius. The name *Rutilia vivipara* (Fabricius) is in current use for the commonest brown-coloured *Rutilia* species ranging from Cape York to Tasmania, and the choice of *vivipara* Fabricius (rather than another species) as type-species is preferred by Australian specialists (Colless, personal communication).

RUTILODEXIA Townsend, 1915, *Proc. biol. Soc. Wash.* **28** : 23. Type-species: ***Rutilia angustipennis*** Walker, 1859, by original designation. ARU ISLANDS.

RUTILOTRIXA Townsend, 1933, *Jl N.Y. ent. Soc.* **40** : 448. Type-species: ***Trixa lateralis*** Walker, 1849, by original designation. AUSTRALIA.

No type-locality was cited by Walker (1849, *List. Spec. dipt. Ins. Coll. Brit. Mus.* **4** : 699) in the original description of *Trixa lateralis* but Austen has at some time labelled the female holotype (in British Museum) " Australia. Purchd. at Mr. Children's sale 407 a.", and Townsend therefore cited Australia in the description of *Rutilotrixa*. This locality may be accepted as correct, although no other Australian material has yet been identified as *lateralis*.

SARALBA Walker, 1865, *J. Proc. Linn. Soc.* **8** : 114. Type-species: ***Saralba ocypteroides*** Walker, 1865, by monotypy. NEW GUINEA.

SCAPHIMYIA Mesnil, 1955, *Flieg. Palaearkt. Reg.* **64**g : 422. Type-species: ***Scaphimyia castanea*** Mesnil, 1955, by original designation. NORTH VIETNAM (TONKIN).

SCHISTOCHILUS Aldrich, 1932, *Proc. U.S. natn. Mus.* **81** (9) : 18. Type-species: ***Schistochilus aristatum*** Aldrich, 1932 [= *Diatraeophaga striatalis* Townsend, 1916], by original designation. JAVA.

SCHIZACTIANA Curran, 1927, *Ent. Mitt.* **16** : 356. Type-species: ***Actia*** (***Schizactiana***) ***valida*** Curran, 1927, by original designation. QUEENSLAND. (As subgenus of *Actia* Robineau-Desvoidy, 1830).

SCHIZOCEROMYIA Townsend, 1926, *Philipp. J. Sci.* **29** : 542. Type-species: ***Schizotachina fergusoni*** Bezzi, 1923, by original designation. NEW SOUTH WALES.

SCOLOGASTER Aldrich, 1926, *Insecutor Inscit. menstr.* **14** : 52. Type-species: ***Scologaster fuscipennis*** Aldrich, 1926 [= *Janthinomyia felderi* Brauer and Bergenstamm, 1893], by original designation. CHINA (SZECHWAN).

SCOTIELLA Mesnil, 1940, *Bull. Soc. ent. Fr.* **45** : 39. Type-species: ***Exorista*** (***Scotiella***) ***bisetosa*** Mesnil, 1940, by original designation. CHINA, JAVA. (As subgenus of *Exorista* Meigen, 1803).

Name preoccupied by *Scotiella* Delo, 1935 (Trilobita), see *Spixomyia* n. n.

SEMISUTURIA Malloch, 1927, *Proc. Linn. Soc. N.S.W.* **52** : 339. Type-species: ***Semisuturia australis*** Malloch, 1927, by original designation. QUEENSLAND.

SENEXORISTA Townsend, 1927, *Suppl̄ta ent.* **16** : 63. Type-species: ***Senexorista sumatrana*** Townsend, 1927, by original designation. SUMATRA.

SENOSTOMA Macquart, 1847, *Mém. Soc. Sci. Agric. Lille* **1846** : 96. *Dipt. exot.* Suppl. **2** : 80. Type-species: ***Senostoma variegata*** Macquart, 1847, by monotypy. TASMANIA.

SERICOTACHINA Townsend, 1916, *Ent. News* **27** : 178. Type-species: ***Paratachina vulpecula*** Wulp, 1896, by original designation. JAVA.

SERICOZENILLIA Mesnil, 1957, *Mém. Soc. r. ent. Belg.* **28** : 18. Type-species: ***Zenillia*** (***Sericozenillia***) ***albipila*** Mesnil, 1957, by monotypy. JAPAN. (As subgenus of *Zenillia* Robineau-Desvoidy, 1830).

SERVILLINA Malloch, 1932, *Stylops* **1** : 201. Type-species: ***Servillia*** (***Servillina***) ***vespiformis*** Malloch, 1932, by original designation. MALAYA. (As subgenus of *Servillia* Robineau-Desvoidy, 1830).

SERVILLIODES Townsend, 1926, *Suppl̄ta ent.* **14** : 37. Type-species: ***Servilliodes sumatrensis*** Townsend, 1926, by original designation. SUMATRA.

SERVILLIOPSIS Townsend, 1916, *Proc. U.S. natn. Mus.* **51** : 314. Type-species: ***Servilliopsis buccata*** Townsend, 1916 [= *Echinomyia flavopilosa* Bigot, 1888], by original designation. JAVA.

SETASIPHONA Townsend, 1934, *Jl N.Y. ent. Soc.* **42** : 248. Type-species: ***Actia siphonosoma*** Malloch, 1930, by original designation. MALAYA.

SIGELOTROXIS Aldrich, 1928, *Proc. U.S. natn. Mus.* **74** (8) : 3. Type-species: ***Sigelotroxis parvus*** Aldrich, 1928, by original designation. CHINA.

SIMOMA Aldrich, 1926, *Proc. U.S. natn. Mus.* **69** (22) : 20. Type-species: ***Simoma grahami*** Aldrich, 1926, by original designation. CHINA (SZECHWAN).

SISYROPA Brauer & Bergenstamm, 1889, *Denkschr. Akad. Wiss., Wien* **56** : 163. *Musc. Schiz.* **1** : 95. Type-species: ***Tachina thermophila*** Wiedemann, 1830, by original designation. JAVA.

SISYROPODODEXIA Townsend, 1927, *Philipp. J. Sci.* **33** : 281. Type-species: ***Sisyropododexia luteicornis*** Townsend, 1927, by original designation. PHILIPPINE REPUBLIC.

SMIDTIOLA Mesnil, 1957, *Mém. Soc. r. ent. Belg.* **28** : 7. Type-species: ***Smidtiola varipes*** Mesnil, 1957, by monotypy. BURMA.

SPIROGLOSSA Doleschall, 1858, *Natuurk. Tijdschr. Ned.-Indie* **17** : 107. Type-species: ***Spiroglossa tpus*** Doleschall, 1858, by monotypy. AMBOYNA.

SPIXOMYIA **n. n.** for *Scotiella* Mesnil, 1940, preoccupied by *Scotiella* Delo, 1935. Type-species: ***Exorista*** (***Scotiella***) ***bisetosa*** Mesnil, 1940.

STENODEXIOPSIS Townsend, 1926, *Supplta ent.* **14** : 17. Type-species: ***Stenodexiopsis sumatrensis*** Townsend, 1926, by original designation. SUMATRA.

STIRAULAX Enderlein, 1936, *Veröff. dt. Kolon.-u. Übersee-Mus. Bremen* **1** : 428. Type-species: ***Tachina vivipara*** Fabricius, 1805, by original designation. Probably AUSTRALIA (Insulis maris pacifici).

STURMIODORIA Townsend, 1928, *Philipp. J. Sci.* **34** : 391. Type-species: ***Sturmiodoria facialis*** Townsend, 1928, by original designation. PHILIPPINE REPUBLIC.

STURMIOPSIS Townsend, 1916, *Proc. U.S. natn. Mus.* **51** : 313. Type-species: ***Sturmiopsis inferens*** Townsend, 1916, by original designation. JAVA.

STYLOGYNEMYIA Townsend, 1927, *Ent. Mitt.* **16** : 280. Type-species: ***Stylogynemyia cylindrica*** Townsend, 1927, by original designation. FORMOSA.

STYLURODORIA Townsend, 1933, *Jl N.Y. ent. Soc.* **40** : 476. Type-species: ***Stylurodoria stylata*** Townsend, 1933, by original designation. FORMOSA.

SUENSONOMYIA Mesnil, 1953, *Bull. Annls Soc. r. ent. Belg.* **89** : 99. Type-species: ***Suensonomyia setinerva*** Mesnil, 1953, by monotypy. CHINA.

SUMATRODEXIA Townsend, 1926, *Supplta ent.* **14** : 26. Type-species: ***Sumatrodexia brevirostris*** Townsend, 1926 [= *Dexia extendens* Walker, 1857], by original designation. SUMATRA.

SUMATRODORIA Townsend, 1927, *Supplta ent.* **16** : 64. Type-species: ***Sumatrodoria summaria*** Townsend, 1927, by original designation. SUMATRA.

SUMATROSTURMIA Townsend, 1927, *Supplta ent.* **16** : 70. Type-species: ***Sumatrosturmia orbitalis*** Townsend, 1927, by original designation. SUMATRA.

SUMATROTACHINA Townsend, 1927, *Supplta ent.* **16** : 59. Type-species: ***Sumatrotachina facialis*** Townsend, 1927, by original designation. SUMATRA.

SUMPIGASTER Macquart, 1855, *Mém. Soc. Sci. Agric. Lille* **1854** : 124. *Dipt. exot.* Suppl. **5** : 104. Type-species: ***Sumpigaster fasciatus*** Macquart, 1855, by monotypy. QUEENSLAND.

TACHINEO Malloch, 1938, *Trans. Proc. R. Soc. N.Z.* **68** : 243. Type-species: ***Tachina clarkii*** Hutton, 1901, by original designation. NEW ZEALAND. (As subgenus of *Neotachina* Malloch, 1938).

TACHINODEXIA Townsend, 1933, *Jl N.Y. ent. Soc.* **40** : 457. Type-species: ***Tachina flavipennis*** Wiedemann, 1824, by original designation. INDIA or EAST INDIES (cited by Wiedemann as " Ind. or." or " Ostindien ").

TAKANOELLA Baranov, 1935, *Vet. Arh.* **5** : 558. Type-species: ***Takanoella parvicornis*** Baranov, 1935, by original designation. JAPAN.

TAKANOMYIA Mesnil, 1957, *Mém. Soc. r. ent. Belg.* **28** : 10. Type-species: ***Takanomyia scutellata*** Mesnil, 1957, by monotypy. JAPAN.

TALARACTIA Malloch, 1930, *Proc. Linn. Soc. N.S.W.* **55** : 305. Type-species: ***Actia*** (***Talaractia***) ***baldwini*** Malloch, 1930, by original designation. QUEENSLAND. (As subgenus of *Actia* Robineau-Desvoidy, 1830).

In the original publication this name is spelled *Tararactia* in the subgeneric heading but *Talaractia* in the description of the type-species: as the name is based on a comparison with *Talarocera* Williston the spelling *Tararactia* is an inadvertent error.

TAMANUKIA Baranov, 1935, *Vet. Arh.* **5** : 551. Type-species: ***Tamanukia japanica*** Baranov, 1935, by original designation. JAPAN.

TARARACTIA Malloch, 1930. See *Talaractia*.

TASMANIOMYIA Townsend, 1916, *Can. Ent.* **48** : 152. Type-species: ***Masicera viridiventris*** Macquart, 1847, by original designation. TASMANIA.

TAYLORIA Malloch, 1930, *Proc. Linn. Soc. N.S.W.* **55** : 98. Type-species: ***Tayloria testacea*** Malloch, 1930, by original designation. QUEENSLAND.

Name preoccupied by *Tayloria* Bourguignat, 1889 (Mollusca), see *Efftayloria* Malloch, 1941.

TERETROPHORA Macquart, 1851, *Mém. Soc. Sci. Agric. Lille* **1850** : 174. *Dipt. exot.* Suppl. **4** : 201. Type-species: ***Teretrophora fasciata*** Macquart, 1851, by monotypy. TASMANIA (probably in error for NEW SOUTH WALES).

TETRAPTEROMYIA Malloch, 1930, *J. fed. Malay St. Mus.* **16** : 119. Type-species: ***Tetrapteromyia klossi*** Malloch, 1930, by original designation. MALAYA.

THELAIROLESKIA Townsend, 1926, *Suppl**ta** ent.* **14** : 23. Type-species: ***Thelairoleskia bicolor*** Townsend, 1926, by original designation. SUMATRA.

THELYCARCELIA Townsend, 1933, *Jl N.Y. ent. Soc.* **40** : 475. Type-species: ***Thelycarcelia thrix*** Townsend, 1933, by original designation. FORMOSA.

THERESIOPSIS Townsend, 1916, *Proc. U.S. natn. Mus.* **51** : 300. Type-species: ***Theresiopsis ficorum*** Townsend, 1916, by original designation. JAVA.

THEROBIA Brauer, 1862, *Verh. zool.-bot. Ges. Wien* **12** : 1231. Type-species: ***Trypoderma abdominalis*** Wiedemann, 1830, by monotypy. BENGAL.

THEROBIOPSIS Townsend, 1919, *Insecutor Inscit. menstr.* **6** : 166. Type-species: ***Aulacephala braueri*** Kertesz, 1899, by original designation. NEW GUINEA.

THRYPTODEXIA Malloch, 1926, *Philipp. J. Sci.* **31** : 509. Type-species: ***Thryptodexia polita*** Malloch, 1926, by original designation. PHILIPPINE REPUBLIC.

THYELLINA Mesnil, 1949, *Flieg. Palaearkt. Reg.* **64**g : 70. Type-species: ***Thyellina brevicornis*** Mesnil, 1949, by monotypy. QUEENSLAND.

Name preoccupied by *Thyellina* Agassiz, 1838 (Pisces), see *Winthellia* ***n. n.***

TONGAMYIA Mesnil, 1953, *Bull. Annls Soc. r. ent. Belg.* **89** : 102. Type-species: ***Tongamyia cinerella*** Mesnil, 1953, by monotypy. TONGA.

TOROCCA Walker, 1860, *J. Proc. Linn. Soc.* **4** : 131. Type-species: ***Torocca abdominalis*** Walker, 1860, by monotypy. CELEBES.

TOXOCNEMIS Macquart, 1855, *Mém. Soc. Sci. Agric. Lille* **1854** : 123. *Dipt. exot.* Suppl. **5** : 103. Type-species: ***Toxocnemis vittata*** Macquart, 1855, by monotypy. SOUTH AUSTRALIA.

TRICHOFORMOSOMYIA Baranov, 1934, *Encycl. ent.* Série B II, **7** : 163. Type-species: ***Trichoformosomyia sauteri*** Baranov, 1934, by original designation. FORMOSA.

TRICHOSTYLUM Macquart, 1851, *Mém. Soc. Sci. Agric. Lille* **1850** : 181. *Dipt. exot.* Suppl. **4** : 208. Type-species: ***Trichostylum rufipalpis*** Macquart, 1851, by monotypy. AUSTRALIA.

TRISCHIDOCERA Villeneuve, 1915, *Annls hist.-nat. Mus. natn. hung.* **13** : 93. Type-species: ***Trischidocera sauteri*** Villeneuve, 1915, by monotypy. FORMOSA.

TRITAXYS Macquart, 1847, *Mém. Soc. Sci. Agric. Lille* **1846** : 81. *Dipt. exot.* Suppl. **2** : 65. Type-species: ***Tritaxys australis*** Macquart, 1847, by monotypy. TASMANIA.

TRIXOMORPHA Brauer & Bergenstamm, 1889, *Denkschr. Akad. Wiss., Wien* **56** : 163. *Musc. Schiz.* **1** : 95. Type-species: ***Trixomorpha indica*** Brauer & Bergenstamm, 1889, by original designation. BENGAL.

TROPHOMYIA Aldrich, 1929, *Proc. U.S. natn. Mus.* **76** (15) : 11. Type-species: ***Trophomyia pictipennis*** Aldrich, 1929 [= *Tachina tepens* Walker, 1849], by original designation. MALAYA.

TROPHOPS Aldrich, 1932, *Proc. U.S. natn. Mus.* **81** (9) : 22. Type-species: ***Trophops clauseni*** Aldrich, 1932, by original designation. JAPAN.

TRUPHIA Malloch, 1930, *Rec. Canterbury Mus.* **3** : 310. Type-species: ***Truphia grisea*** Malloch, 1930, by original designation. NEW ZEALAND.

TRYPHERINA Malloch, 1938, *Trans. Proc. R. Soc. N.Z.* **68** : 219. Type-species: ***Trypherina grisea*** Malloch, 1938, by monotypy. NEW ZEALAND.

TYLODEXIA Townsend, 1926, *Supplta ent.* **14** : 27. Type-species: ***Tylodexia tenuis*** Townsend, 1926 [= *Dexia precedens* Walker, 1860], by original designation. SUMATRA.

UCLESIELLA Malloch, 1938, *Trans. Proc. R. Soc. N.Z.* **68** : 167. Type-species: ***Uclesiella irregularis*** Malloch, 1938, by original designation. NEW ZEALAND.

UGIMEIGENIA Townsend, 1916, *Proc. U.S. natn. Mus.* **51** : 316. Type-species: ***Ugimeigenia elzneri*** Townsend, 1916, by original designation. BANKS ISLAND (Torres Strait, Queensland).

UGIMYIA Rondani, 1870, *Boll. Soc. ent. ital.* **2** : 137. Type-species: ***Ugimyia sericariae*** Rondani, 1870, by monotypy. JAPAN.

The original descriptions of *Ugimyia* and its type-species are based on the larva and pupa, but the adult of *Ugimyia sericariae* Rondani is described by Cornalia (1870, *Boll. Soc. ent. ital.* **2** : 223) on a later page in the same journal.

URODEXIA Osten-Sacken, 1882, *Annali Mus. civ. Stor. nat. Giacomo Doria* **18** : 11. Type-species: ***Urodexia penicillum*** Osten-Sacken, 1882, by monotypy. CELEBES.

URODEXIOMIMA Townsend, 1927, *Philipp. J. Sci.* **33** : 280. Type-species: ***Urodexiomima uramyoides*** Townsend, 1927, by original designation. PHILIPPINE REPUBLIC.

UROEUANTHA Townsend, 1927, *Philipp. J. Sci.* **33** : 279. Type-species: ***Uroeuantha longipes*** Townsend, 1927, by original designation. PHILIPPINE REPUBLIC.

UROMEDINA Townsend, 1926, *Supplta ent.* **14** : 18. Type-species: ***Uromedina caudata*** Townsend, 1926, by original designation. SUMATRA.

USCHIZACTIA Townsend, 1934, *Jl N.Y. ent. Soc.* **42** : 248. Type-species: ***Actia uniseta*** Malloch, 1930, by original designation. MALAYA.

VELUTA Malloch, 1938, *Trans. Proc. R. Soc. N.Z.* **68** : 207. Type-species: ***Veluta albicincta*** Malloch, 1938, by original designation. NEW ZEALAND.

VERREAUXIA Robineau-Desvoidy, 1863, *Hist. nat. Dipt. Env. Paris* **1** : 893. Type-species: ***Verreauxia auripilis*** Robineau-Desvoidy, 1863, by original designation. TASMANIA.

Name preoccupied by *Verreauxia* Hartlaub, 1856 (Aves). No replacement name is proposed as *Verreauxia* Robineau-Desvoidy is regarded as a junior subjective synonym of Rond*ahpr peai*ani, 1856.

VESPIVORA Malloch, 1930, *Proc. Linn. Soc. N.S.W.* **55** : 347. Type-species: ***Vespivora nigriventris*** Malloch, 1930, by original designation. QUEENSLAND.

VESPOCYPTERA Townsend, 1927, *Ent. Mitt.* **16** : 279. Type-species: ***Vespocyptera petiolata*** Townsend, 1927, by original designation. FORMOSA.

VORIELLA Malloch, 1930, *Proc. Linn. Soc. N.S.W.* **55** : 335. Type-species: ***Voriella uniseta*** Malloch, 1930, by original designation (cited as *Voriella recedens*, n. sp. by Malloch in error: see Malloch, 1931, *Proc. Linn. Soc. N.S.W.* **56** : 298). NEW SOUTH WALES.

VORINA Malloch, 1930, *Proc. Linn. Soc. N.S.W.* **55** : 321. Type-species: ***Vorina setibasis*** Malloch, 1930, by original designation. NEW SOUTH WALES.

WATTIA Malloch, 1938, *Trans. Proc. R. Soc. N.Z.* **68** : 162. Type-species: ***Wattia ferruginea*** Malloch, 1938, by original designation. NEW ZEALAND.

WEINGAERTNERIELLA Baranov, 1932, *Neue Beitr. syst. Insektenk.* **5** : 74. Type-species: ***Sturmia paradoxalis*** Baranov, 1932, by monotypy. FORMOSA. (As subgenus of *Sturmia* Robineau-Desvoidy, 1830).

WIEDEMANNIOMYIA Townsend, 1933, *Jl N.Y. ent. Soc.* **40** : 469. Type-species: ***Tachina metallica*** Wiedemann, 1824, by original designation. EAST INDIES.

WINTHELLIA **n. n.** for *Thyellina* Mesnil, 1949, preoccupied by *Thyellina* Agassiz, 1838. Type-species: ***Thyellina brevicornis*** Mesnil, 1949.

WULPITACHINA Villeneuve, 1934, *Rev. franc. Ent.* **1** : 181. Type-species: ***Paratachina vulpecula*** Wulp, 1896, by original designation. JAVA.

XANTHOERIGONE Townsend, 1927, *Supplta ent.* **16** : 71. Type-species: ***Xanthoerigone oralis*** Townsend, 1927, by original designation. SUMATRA.

XANTHOOESTRUS Villeneuve, 1914, *Annls hist.-nat. Mus. natn. hung.* **12** : 438. Type-species: ***Xanthooestrus fastuosus*** Villeneuve, 1914, by monotypy. FORMOSA.

XANTHOPTEROMYIA Townsend, 1926, *Supplta ent.* **14** : 24. Type-species: ***Xanthopteromyia tegulata*** Townsend, 1926, by original designation. SUMATRA.

XENOLOPHOSIA Villeneuve, 1926, *Bull. Annls Soc. r. ent. Belg.* **66** : 273. Type-species: ***Xenolophosia hamulata*** Villeneuve, 1926, by subsequent designation of Townsend, 1931, *Ann. Mag. nat. Hist.* (10) **8** : 391. FORMOSA.

XENORHYNCHIA Malloch, 1938, *Trans. Proc. R. Soc. N.Z.* **68** : 190. Type-species: ***Xenorhynchia peeli*** Malloch, 1938, by original designation. NEW ZEALAND.

XENOSTURMIA Mesnil, 1944, *Flieg. Palaearkt. Reg.* **64**g : 26. Type-species: ***Xenosturmia testaceipes*** Mesnil, 1944 [= *Eurygaster decipiens* Walker, 1859], by original designation. NEW BRITAIN.

ZAMBESA Walker, 1857, *J. Proc. Linn. Soc.* **1** : 21. Type-species: ***Zambesa ocypteroides*** Walker, 1857, by monotypy. SINGAPORE.

ZAMBESOIDES Townsend, 1927, *Philipp. J. Sci.* **33** : 285. Type-species: ***Zambesoides samarensis*** Townsend, 1927, by original designation. PHILIPPINE REPUBLIC.

ZAMBESOPSIS Townsend, 1933, *Jl N.Y. ent. Soc.* **40** : 451. Type-species: ***Zambesa claripalpis*** Villeneuve, 1926, by original designation. FORMOSA.

ZAMIMUS Malloch, 1932, *Ann. Mag. nat. Hist.* (10) **10** : 319. Type-species: ***Zamimus pendleburyi*** Malloch, 1932, by original designation. BORNEO.

ZEBROMYIA Malloch, 1929, *Proc. Linn. Soc. N.S.W.* **54** : 321. Type-species: ***Zebromyia obesa*** Malloch, 1929, by original designation. TASMANIA.

ZEALANDOTACHINA Malloch, 1938, *Trans. Proc. R. Soc. N.Z.* **68** : 223. Type-species: ***Macquartia subtilis*** Hutton, 1901, by original designation. NEW ZEALAND.

ZENARGOMYIA Crosskey, 1964, *J. ent. Soc. Qd* **3** : 18. Type-species: ***Zenargomyia moorei*** Crosskey, 1964, by original designation. NEW SOUTH WALES.

ZITA Curran, 1927, *Ent. Mitt.* **16** : 350. Type-species: ***Zita aureopyga*** Curran, 1927, by original designation. QUEENSLAND.

ZORAMSCEUS Enderlein, 1936, *Veröff. dt. Kolon.-u. Übersee-Mus. Bremen* **1** : 416. Type-species: ***Rutilia erichsonii*** Engel, 1925, by original designation. WESTERN AUSTRALIA.

ZOSTEROMEIGENIA Townsend, 1919, *Proc. U.S. natn. Mus.* **56** : 579. Type-species: ***Zosteromeigenia mima*** Townsend, 1919, by original designation. QUEENSLAND.

ZOSTEROMYIA Brauer & Bergenstamm, 1891, *Denkschr. Akad. Wiss., Wien* **58** : 376. *Musc. Schiz.* **2** : 72. Type-species: ***Zosteromyia braueri*** Townsend, 1933 [= *Myobia cingulata* Brauer & Bergenstamm, not of Macquart, by misidentification], by original designation. TASMANIA, QUEENSLAND.

ZOSTEROMYIOPSIS Townsend, 1933, *Jl N.Y. ent. Soc.* **40** : 456. Type-species: ***Myobia cingulata*** Macquart, 1851, by original designation. AUSTRALIA, TASMANIA.

ZOSTEROPSIS Townsend, 1916, *Proc. U.S. natn. Mus.* **51** : 309. Type-species: ***Zosteropsis rutherfordi*** Townsend, 1916, by original designation. CEYLON.

ZYGOCARCELIA Townsend, 1927, *Suppl̶ta ent.* **16** : 64. Type-species: ***Zygocarcelia cruciata*** Townsend, 1927, by original designation. SUMATRA.

SUMMARY OF PREOCCUPIED AND REPLACEMENT NAMES

The following list summarises the preoccupied junior homonyms in the genus-group names of Oriental and Australasian Tachinidae, together with their replacement names:

Preoccupied name	Replacement name
Arthuria Malloch, 1938	*Montanarturia* Miller, 1945
Chlorogaster Macquart, 1851	*Chlorogastrina* n. n.
Delta Malloch, 1930	*Deltomyza* Malloch, 1931 ; *Mallochiola* Strand, 1932 (preoccupied)
Diaphania Macquart, 1843	*Prodiaphania* Townsend, 1927
Duvaucelia Robineau-Desvoidy, 1830	*Curtocera* Macquart, 1835
Engycera Malloch, 1938	*Gracilicera* Miller, 1945
Euphasia Townsend, 1908	*Neximyia* n. n.
Hygia Mesnil, 1952	none required (*Hygia* Mesnil currently treated as synonym of *Chaetexorista* Brauer & Bergenstamm, 1894).
Mallochiola Strand, 1932	none required (*Deltomyza* Malloch available as replacement name for *Delta* Malloch)
Mycteromyia Mesnil, 1950	*Mycteromyiella* Mesnil, 1965
Neophasia Brauer & Bergenstamm, 1893	*Euphasia* Townsend, 1908 (preoccupied)
Phorocerosoma Malloch, 1929	*Phorocerostoma* Malloch, 1930
Pygidia Malloch, 1930	*Pygidimyia* n. n.
Scotiella Mesnil, 1940	*Spixomyia* n. n.
Tayloria Malloch, 1930	*Efftayloria* Malloch, 1941
Thyellina Mesnil, 1949	*Winthellia* n. n.
Verreauxia Robineau-Desvoidy, 1863	none required (*Verreauxia* Robineau-Desvoidy currently treated as synonym of *Blepharipa* Rondani)

The following new combinations result from the new names proposed above:

Chlorogastrina tasmanensis (Macquart, 1851) **comb. n.**
Neximyia picta (Brauer & Bergenstamm, 1893) **comb. n.**
Pygidimyia rufolateralis (Malloch, 1930) **comb. n.**
Winthellia brevicornis (Mesnil, 1949) **comb. n.**

The provision of the replacement name *Spixomyia* does not entail any new specific combinations since *Scotiella* Mesnil is currently regarded as a subgenus of *Exorista* Meigen, 1803 (Mesnil, 1960, *Flieg. Palaearkt. Reg.* **64**g : 571).

SYNOPSIS OF GENUS-GROUP NAMES BASED ON AUSTRALIAN TYPE-SPECIES

Acephana Townsend, 1916
Acucera Malloch, 1930
Agalmia Enderlein, 1936
Amphibolia Macquart, 1843
Amphitropesa Townsend, 1933
Amplipila Curran, 1927
Anagonia Brauer & Bergenstamm, 1891
Anamastax Brauer & Bergenstamm, 1891
Anatropomyia Malloch, 1930
Apalpostoma Malloch, 1930
Apalpus Malloch, 1929
Apatemyia Macquart, 1846
Apilia Malloch, 1930
Aprotheca Macquart, 1851
Archimera Mesnil, 1954
Arrhenomyza Malloch, 1929
Australotachina Curran, 1938
Austrodexia Malloch, 1930
Austrophasia Townsend, 1916
Austrophorocera Townsend, 1916
Austrophryno Townsend, 1916

Bactromyiella Mesnil, 1952
Ballardia Curran, 1927
Besserioides Curran, 1938

Calopygidia Malloch, 1930
Carcelimyia Mesnil, 1944
Chaetogastrina Malloch, 1929
Chaetophthalmus Brauer & Bergenstamm, 1891
Chetogaster Macquart, 1851
Chlorodexia Townsend, 1916
Chlorogaster Macquart, 1851
Chlorogastrina n. n.
Chlorotachina Townsend, 1915
Chrysopasta Brauer & Bergenstamm, 1889
Chrysorutilia Townsend, 1915
Codium Enderlein, 1936
Crypsina Brauer & Bergenstamm, 1889
Cystometopia Townsend, 1926

Delta Malloch, 1930
Deltomyza Malloch, 1931
Diaphania Macquart, 1843
Doddiana Curran, 1927
Donovanius Enderlein, 1936

Echrysopasta Townsend, 1932
Efftayloria Malloch, 1941
Eipogonoides Curran, 1938
Euamphibolia Townsend, 1916
Eucompsa Enderlein, 1936
Euphasia Townsend, 1908
Eurygastropsis Townsend, 1916
Eustacomyia Malloch, 1927
Exechopalpus Macquart, 1847

Froggattimyia Townsend, 1916

Geraldia Malloch, 1930
Gerotachina Townsend, 1916
Glossosalia Mesnil, 1960
Gonanamastax Townsend, 1933
Goniophana Brauer & Bergenstamm, 1889
Grapholostylum Macquart, 1851

Habrota Enderlein, 1936
Heterometopia Macquart, 1846

Hillia Malloch, 1929
Hobartia Malloch, 1930
Hyleorus Aldrich, 1926

Lasiocalypter Malloch, 1930
Lasiocalyptrina Malloch, 1930

Macreuthera Bezzi, 1925
Macrochloria Malloch, 1929
Macropia Malloch, 1930
Macropodexia Townsend,1933
Mallochiola Strand, 1932

Menevillea Enderlein, 1936
Mesembriomintho Townsend, 1916
Microrutilia Townsend, 1915
Microtropesa Macquart, 1846
Monoleptophaga Baranov, 1938
Myiotrixa Brauer & Bergenstamm, 1893

Neophasia Brauer & Bergenstamm, 1893
Neorutilia Malloch, 1936
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L. A. MOUND

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BY

L. A. MOUND
British Museum (Natural History)

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By L. A. MOUND

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SYNOPSIS

Nineteen species of Aeolothripidae are recognized from Australia and these are distributed in seven genera. One of these species, *fasciatus*, is Holarctic, one of them, *cinctus*, is here recorded from India, but the others are known only from Australia. The type specimens of all the Australian species except *cinctus* have been examined, and all the species are re-described and keys provided for their recognition. Six new combinations and three new synonymies are included and three species are recalled from synonymy. Three new species and two new genera are described, and one of these genera includes two South American species originally described in *Desmothrips*.

INTRODUCTION

The systematics of the order Thysanoptera have been little studied in Australia, although there are records and descriptions of more than three hundred nominal species. About half of these names were published privately by A. Girault in a series of very brief descriptions (see de Santis, 1961), and almost all the other species were described in various journals by one of the following authors: Bagnall; Karny; Hood; Morison; Moulton; Priesner. With this widely scattered literature the identification of species is a serious problem, especially as the total number of species involved probably far exceeds the figure of three hundred quoted above. The only keys that have been published refer to the fifteen species of common flower thrips and potential pests (Steele, 1935), and the annotated check list published by Kelly & Mayne (1934) is in need of revision. The object of the present paper is the production of keys for the recognition of the described species in the smallest of the three major families, in order to provide a framework for future studies. Most of the species are known only from a single sample and many from a unique specimen, and this is due to the lack of collectors. Most species have been collected by one of the following three workers: Girault in Brisbane, Kelly in Melbourne and Newman in Perth. In view of the problems raised by the variation within species, further work must begin with both extensive and intensive collecting.

Many of the earlier descriptions of Australian Thysanoptera species refer mainly to colour patterns and characters derived from a study of the silhouette of the insects, but modern microscopes have made possible the examination of a wider range of characters, such as the integumental sculpture and chaetotaxy of the ventral surface. For the full examination of these characters however, specimens must be fully dehydrated and cleared and the present author usually macerates some specimens from each series in 5% sodium hydroxide solution for about one hour. This destroys the body contents and pigments, thus facilitating dehydration and clearing in clove oil, but if prolonged it lightens the cuticular colour and damages the wings. The period of maceration varies with the material available even within a species. In general however very small pale thripids require longer treatment than larger specimens, although very large black species may require partial bleaching to demonstrate some details.

The inadequacy of the silhouette type of character by itself for recognizing species is evident from the data Karny (1924) gave for separating the four then known species of *Desmothrips*. He gave the following ratios between antennal segments III and IV as the most important differences between the species : *bagnalli* 100/90 ; *propinquus* 108/102 ; *australis* 104/82 ; *tenuicornis* 165/126. When reduced to unity these figures become : 1/1·11 ; 1/1·06 ; 1/1·27 ; 1/1·31 ; whilst comparable figures produced during the course of the present study gave the following ranges : *australis* 1/1·04 to 1/1·31 and *tenuicornis* 1/1·15 to 1/1·37. The other distinguishing characters used included the relative lengths of the dark and light areas on the fore wing, and the extent of brown shading on the apex of the third antennal segment. The variation in these characters is discussed below under *D. australis*.

In the present revision considerable emphasis is laid on the chaetotaxy of both the mesonotum and the abdominal sternites, and also on the sculpture of the metanotum. These characters may be of considerable importance in defining and working out the relationships between genera. In *Arcuthrips* species the antennal sensoria have faint internal markings but this character may not be of any great value at the generic level. The sensoria of *Desmothrips bagnalli* have well developed internal markings but these are only visible in certain *australis* specimens mounted in Berlese Mountant. At the specific level, in *Desmothrips*, it has been found that the colour of the costal vein around the distal pale area of the fore wing is more constant than the colouration of the wing membrane itself.

Aeolothrips and *Desmothrips* have been considered to belong in two different tribes, the Aeolothripini and the Orothripini. This grouping was based on the number of divisions found in the second segment of the maxillary palps. In Orothripini the second maxillary palp segment is clearly broken into about six divisions. In Aeolothripini this segment has about four pale transverse lines, each accompanied by a constriction, and at the apex only a single division is clearly free (Text-figs. 24–26). This difference appears to be a matter of degree rather than a fundamental distinction, especially as in some specimens the left and right palps do not have the same number of divisions, and the males of some *Desmothrips* species have fewer divisions than the females. Bagnall regarded the subdivision of the maxillary palps in *Desmothrips* as a primitive character, but in view of the supposed Hemipteroid ancestry of the

Thysanoptera it is possible that the multisegmented condition is secondary.

The relationships between the genera treated here are not clear. In view of the presence of laterally placed sternal accessory setae, none of the Australian genera appear to have any close relationship to the Holarctic *Aeolothrips*. However the two pairs of median accessory setae found on sternite VII in *Aeolothrips* species may be homologous with the two submedian pairs of marginal setae on sternite VII in *Desmothrips* species (cf. Text-figs. 40 & 45). These two pairs of setae are usually smaller than the other marginals and *Desmothrips* species have more marginal setae than are present in *Aeolothrips*. *Cranothrips* is closely related to the Holarctic *Ankothrips*, and on account of their long setae these genera are placed in the subfamily Melanthripinae. It may be significant that other genera of the Melanthripinae have well developed sternal accessory setae. *Andrewarthaia* is clearly derived from *Desmothrips*, but *Lamprothrips* and *Arcuthrips* are rather more distant. *Franklinothrips* species show the geographical distribution pattern often associated with relict groups.

ACKNOWLEDGEMENTS

This revision has been made possible by the assistance of a number of persons to all of whom the author would like to express his gratitude. In particular Mrs. H. G. Andrewartha (*née* H. Vevers Steele) kindly made available her important collection of *Desmothrips* species. Mr. E. Reed of C.S.I.R.O., Canberra, compared the Check List given below with his own unpublished list of Australian Thrips, and also supplied copies of Girault's papers and loaned many specimens collected in New South Wales. Type material was loaned by Dr. H. Priesner, Dr. L. de Santis, Dr. J. Pelikan, Miss H. Brookes of the Waite Institute, Dr. E. C. Dahms of the Queensland Museum, the Naturhistoriska Riksmuseum, Stockholm, and the Moulton Collection, California. The author is grateful to Miss Kellie O'Neill of the U.S.D.A., Washington, for her frequent advice and the loan of many specimens, and also to Mr. E. R. Speyer for his help in determining *Aeolothrips* species.

The location of the material which has been examined and is listed below under each species is shown by the following abbreviations : Mrs. H. G. Andrewartha, Adelaide (HVS Coll.) ; British Museum (Natural History), London (BMNH) ; Moulton Collection, California Academy of Sciences (Cal. A. Sci.) ; National Insect Collection, C.S.I.R.O., Canberra (ANIC) ; National Museum of Victoria, Melbourne (VM) ; University of Queensland, Brisbane (UQ) ; United States National Museum, Washington (USNM) ; Waite Institute, Adelaide (WI).

AUSTRALIAN AEOLOTHRIPIDAE WITH STATE RECORDS

Aeolothrips fasciatus (Linnaeus) : Vic.
Andrewarthaia aurea (Moulton) : W. Aust.
    kellyana (Bagnall) : S. Aust. ; N.S.W. ; Qu.
    minor sp. n. : N.S.W.
Arcuthrips cinctus (Hood) : Qu.
Cranothrips emersoni Girault : Qu.
    poultoni Bagnall : W. Aust.

Desmothrips australis (Bagnall) : Vic. ; N.S.W. ; W. Aust.
bagnalli Karny : Qu.
mendozai Girault : W. Aust.
obsoletus Bagnall : Vic. ; ?Qu.
propinquus (Bagnall) : Tas. ; S. Aust. ; Vic. ; N.S.W. ; Qu.
reedi sp. n. : N.S.W.
steeleae sp. n. : N.S.W.
tenuicornis (Bagnall) : S. Aust. ; Vic. ; N.S.W. ; Qu.
uniguttus Girault : Qu.

Franklinothrips variegatus Girault : Qu.

Lamprothrips maculosus Moulton : W. Aust.
miltoni (Girault) : Qu.

Key to Genera

1 Sternite VII of female with two pairs of accessory setae closer to the midline than the submedian pair of marginal setae (Text-fig. 40) ; no accessory setae laterally on sternite VII ; sternites III to VI without any accessory setae, only with marginal setae . . . . **AEOLOTHRIPS** (p. 47)

– Sternite VII of female with accessory setae lateral to the submedian marginal setae ; sternites III to VI usually with accessory setae laterally at least 2

2 Antennal III about five times as long as II ; body brown, with abdominal segments I to IV and X, and antennals III and IV yellow ; wings brown with transverse pale bands sub-basally, subapically and medially ; basal abdominal segments strongly constricted . . . . **FRANKLINOTHRIPS** (p. 71)

– Antennal III about three times as long as II or less 3

3 Antennal I with a median serrate lobe extending nearly to apex of II ; antennal segments all clearly separated from each other, bearing rings of microtrichia (Text-figs. 9–10) . . . . **CRANOTHRIPS** (p. 53)

– Antennal I without a serrate prolongation ; antennal segments V to IX connate . 4

4 Metanotum strongly reticulate ; mesonotum usually with more than one pair of median setae. 5

– Metanotal sculpture arcuate, consisting of a series of parallel lines arched around anterior margin ; mesonotum with only one pair of median setae 6

5 Pronotum with one pair of major setae at posterior angles ; sternite VII with median marginal setae about three times as long as accessory setae (Text-fig. 54) ; fore wings broad, scale with about twelve setae (Text-fig. 12) **ANDREWARTHAIA** gen. n. (p. 47)

– Pronotum without any long setae ; sternal marginal setae about twice as long as accessory setae or shorter ; fore wing scale with fewer setae . **DESMOTHRIPS** (p. 54)

6 Sensorium on antennal III short and broad, not curving around apex of segment (Text-fig. 14) ; sternal marginal setae not longer than accessory setae (Text-fig. 42) . . . . **LAMPROTHRIPS** (p. 72)

– Sensorium on antennal III long and narrow, curving around apex of segment, with weak internal markings ; sternal marginal setae longer than accessory setae (Text-figs. 43 & 44) . . . . **ARCUTHRIPS** gen. n. (p. 51)

DESCRIPTION OF GENERA AND SPECIES

AEOLOTHRIPS Haliday

Aeolothrips Haliday, 1836 : 451. Type-species : *Aeolothrips* (*Aeolothrips*) *albicinctus* Haliday by monotypy of nominate sub-genus.
Aeolothrips Haliday ; Bailey, 1951 : 43–80 ; Priesner, 1964 : 18–28.

This is a large genus, including about eighty species which are largely Holarctic in distribution. The sternal chaetotaxy is quite distinctive and the fore wings are usually banded. Antennal segments V to IX are connate, and, as VI is usually about as long as it is broad, these terminal antennal segments form a distinct compact unit. The sensoria on III and IV are usually short and broadly linear, that on IV curving slightly around the apex of the segment. The mesonotum has a single pair of median setae, and the males commonly have terminal claspers. Only one species has been recorded from Australia.

Aeolothrips fasciatus (Linnaeus)

(Text-figs. 26, 36 & 40)

Thrips fasciata Linnaeus, 1758 : 457.
Aeolothrips fasciatus (Linnaeus) ; Priesner, 1964 : 21.

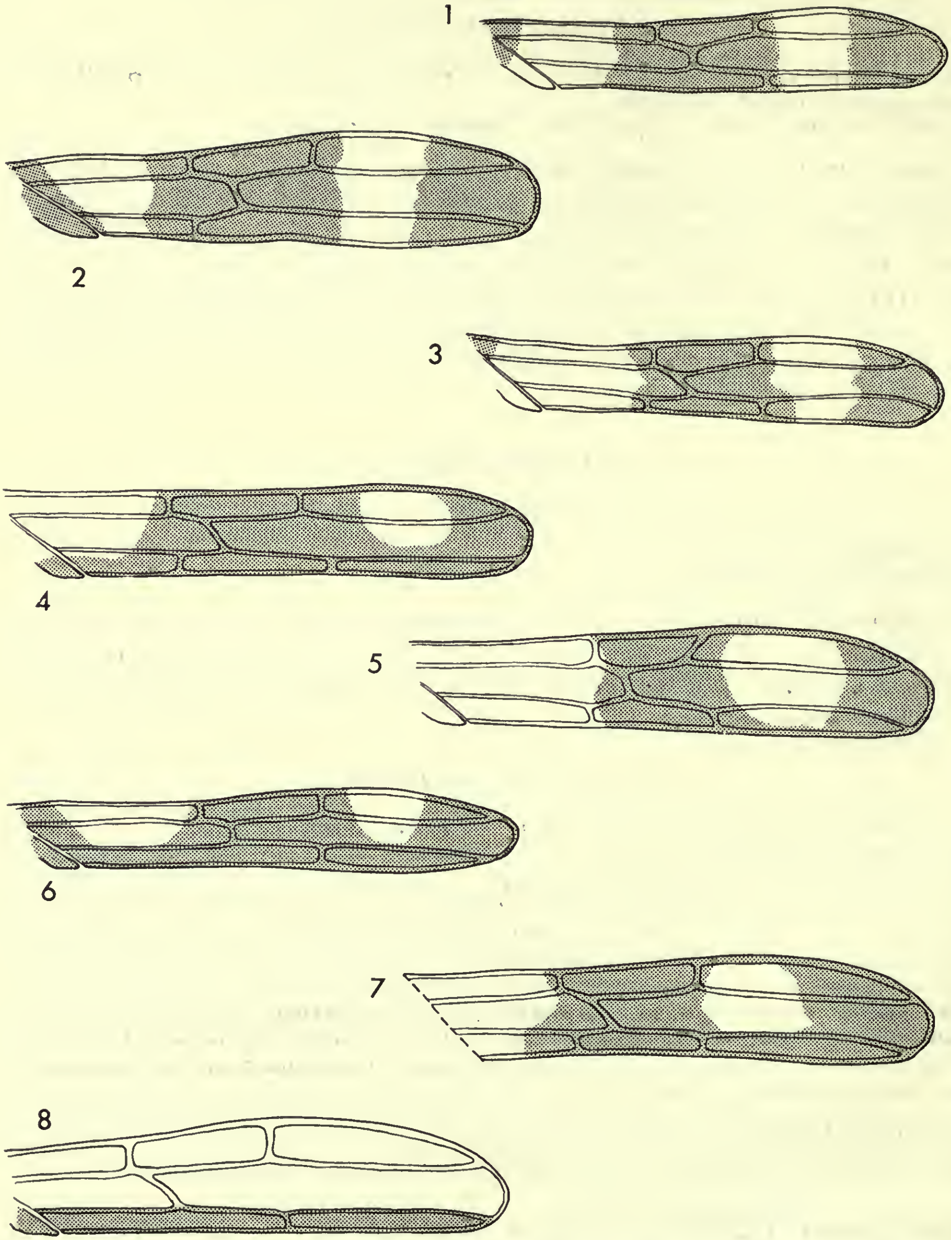
A single female, apparently of this widespread Holarctic species, is present in the Steele Collection. This is a new record for Australia although the species is known from New Zealand. The data on the slide are as follows : VICTORIA, Melbourne University, on rose, 31.iii.1934.

ANDREWARTHAIA gen. n.

Antennae nine-segmented ; sensorium on IV linear, curving around apex of segment ; sensorium on III linear and straight. Dorsal surface of head with numerous stout recurved setae, one pair of interocellar setae a little larger ; distal segment of maxillary palp with one or two apical divisions as in *Aeolothrips* ; labial palp four-segmented. Prothorax with numerous small stout recurved setae ; posterior margin with the fourth or fifth pair of setae from the midline twice as large as the other prothoracic setae. Mesonotum with about ten pairs of accessory median setae. Metanotum reticulate, reticles without internal markings ; a pair of pores medially ; metanotal setae as in *Desmothrips*, rather slender. Fore tarsus with typical Aeolothripid claw and tooth. Surface of legs, head, prothorax and lateral part of tergites covered with rows of fine microtrichia. Fore wing broad, venal setae numerous, short and stout except at apex, distance between them little greater than their length ; scale with 12 to 15 short stout setae. Abdominal sternites III to VII with a transverse row of short accessory setae, each seta less than half as long as the median marginal setae. Male abdomen as in *Desmothrips*, with sternal accessory setae but without sickle-shaped bristles, claspers or tubercles.

Type-species : *Rhipidothrips kellyanus* Bagnall, 1924.

The species included in the Holarctic genus *Rhipidothrips* have lenticular sensoria on the third and fourth antennal segments (Bailey, 1954). In *kellyana* (Bagnall) and *aurea* (Moulton) these sensoria are linear. These two species and the new one described below, are related to *Desmothrips* in having accessory mesonotal setae, a reticulate metanotum and sternal accessory setae. They can be distinguished



FIGS. 1–8. Shading of fore wings of Australian Aeolothripid species. 1, *Desmothrips australis*. 2, *D. steeleae*. 3, *D. tenuicornis*. 4, *D. bagnalli*. 5, *D. propinquus*. 6, *D. uniguttus*. 7, *D. propinquus*. 8, *Andrewarthaia kellyana*.

however by the presence of a pair of stout setae near the hind angles of the pronotum, and the greater length of the sternal marginal setae. The three known species, all Australian, lack the dark red internal body pigments of *Desmothrips* species and the cuticular colour is also much lighter. The genus is named in honour of the extensive studies on *Thrips imaginis* in South Australia by Professor H. G. Andrewartha and his colleagues.

Key to Species

1 Wings uniformly shaded ; antennal III largely brown, antennals IV to IX dark brown **minor** sp. n. (p. 51)
– Wings largely pale ; antennal III yellow basally, antennals IV to IX blackish brown . 2
2 Fore wings with posterior border shaded . . . . . . **kellyana** (p. 49)
– Fore wings without any shading at posterior margin . . . . **aurea** (p. 49)

Andrewarthaia aurea (Moulton) **comb. n.**

Rhipidothrips aureus Moulton, 1935 : 98.

The following notes are based on the holotype and three paratypes mounted on one slide from the Moulton Collection. The species is very similar to *kellyana* in its chaetotaxy and sculpture, and the only distinguishing character appears to be the absence of shading along the hind border on the membrane of the fore wing. The type specimens are probably not fully mature but the fore wing ring vein is quite dark. Even in teneral females of *kellyana*, in which the ring vein is not fully pigmented and the body quite pale, the posterior border of the fore wing is distinctly shaded.

The golden yellow colour of *aurea* is due to the body contents, and in addition the hypodermal pigment consists of numerous small orange-red globules. The abdominal tergites and sternites are shaded grey, and the tip of the abdomen, the mouth parts, and the base of the head are darker brown.

Measurements (*in μ*). Antennals III–IX ; 130 ; 107 ; 68 ; 49 ; 42 ; 10 ; 16. Fore wing length/breadth : 1,000/180. Hind tibia : 320.

Material examined. Holotype ♀. WESTERN AUSTRALIA : Northam, on blossom of native tree, 11.iv.1932, (Moulton No. 5088) (Cal. A. Sci.).

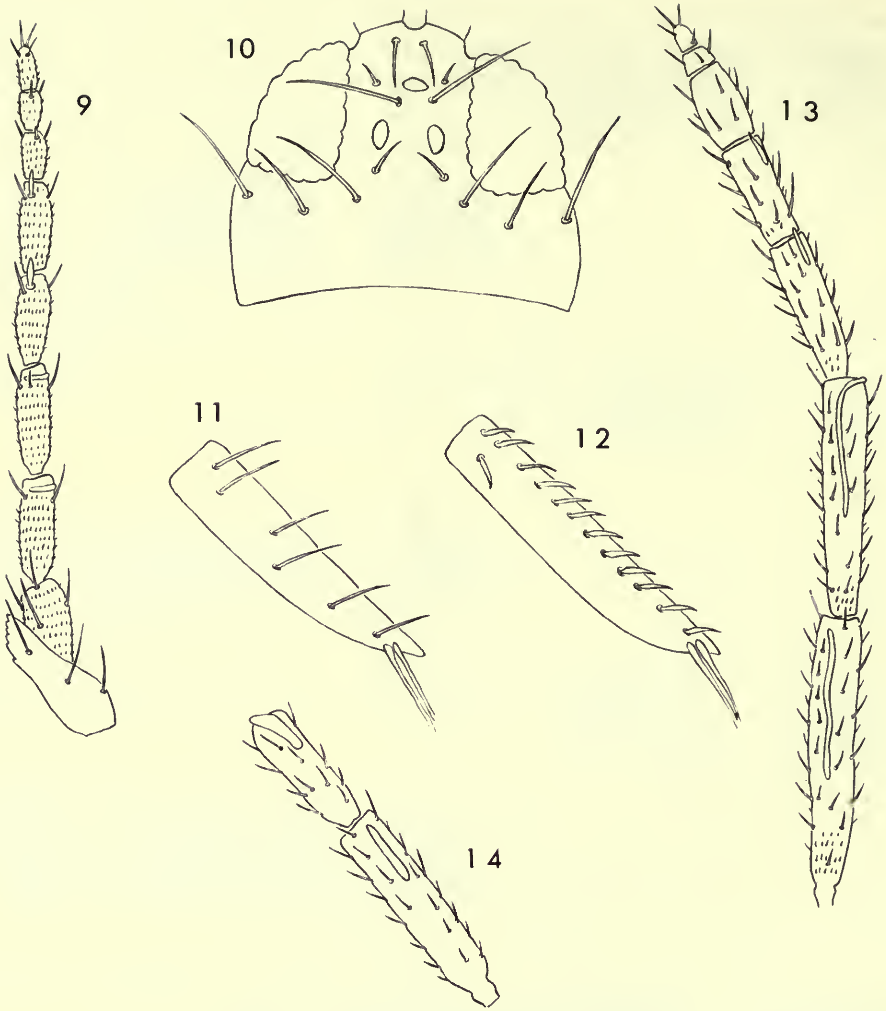
Paratypes. 3 ♀ with data as for holotype.

Andrewarthaia kellyana (Bagnall) **comb. n.**

(Text-figs. 8, 12, 13, 35 & 54)

Rhipidothrips kellyanus Bagnall, 1924*a* : 584–585.
Aeolothrips hyalinipennis Girault, 1930 : 1, **syn. n.**

Bagnall described this species from the fragmented remains of two females, which did not include the hind wings nor the prothoracic and mesothoracic legs. The more complete specimen is here designated as the LECTOTYPE, but for the following redescription a long series of females from New South Wales with one male has been examined. Most of these specimens were collected on *Eucalyptus*, but Girault collected the specimens on which he based *hyalinipennis* from the window of a house.



Figs. 9–14. 9–11, *Cranothrips poultoni*. 9, Antenna. 10, Head. 11, Fore wing scale. 12–13, *Andrewarthaia kellyana*. 12, Fore wing scale. 13, Antenna. 14, *Lamprothrips maculosus*, antennal segments III and IV.

♀. Length 1·7 to 2·5 mm. Colour greyish yellow with dark setae; abdominal segments IX and X dark brown, tergites III to VIII dark medially. Antennal I yellow with dark apex; II dark medially but yellow laterally; III yellow in basal third; antennae otherwise blackish brown. Fore wing pale, area between second vein and hind margin shaded; ring vein dark except basally in costal region (Text-fig. 8). Sensorium on antennal III linear, straight; sensorium on IV linear, curving around distal margin of segment; segments V to IX connate (Text-fig. 13). Head with numerous setae between and behind eyes; one pair of interocellar setae stouter than the rest. Pronotal setae very numerous, about 20 along fore margin, small but stout and dark; hind margin with about seven pairs, the fourth pair from the midline twice as large as the rest. Mesonotum with about ten pairs of accessory median setae (Text-fig. 35). Metanotum reticulate, reticles without internal markings, with two pairs of setae much finer than the mesonotal setae. Fore wing costal setae small; scale with about twelve setae (Text-fig. 12). Abdominal sternite VII with median pair of accessory setae just lateral to median marginal setae; sternites V and VI with almost complete row of accessory setae (Text-fig. 54).

Measurements (*in μ*)

	Antennal segments							Fore wing		Hind
	III	IV	V	VI	VII	VIII	IX	Length	Breadth	tibia
Lectotype ♀	145	130	78	57	44	14	14	1250	240	380
Small ♀	119	112	71	52	39	10	16	1000	190	320

Material examined. LECTOTYPE ♀. SOUTH AUSTRALIA: Mount Lofty Ranges, *Eucalyptus leucoxylon*, 22.iv.1923 (*R. Kelly*) (BMNH).

Paratype. 1 ♀, with similar data to lectotype.

NEW SOUTH WALES: Parkes, *Eucalyptus albens*, 5 ♀, 5.viii.1959 (*E. M. Reed*); Carrathool, *Eucalyptus longiflorens*, 4 ♀, 1 ♂, 12.ix.1959 (*E. M. Reed*); Leeton, *Eucalyptus melliodora*, 4 ♀, 19.ix.1959 (*E. M. Reed*); Ashford, *Eucalyptus melliodora*, 1 ♀, 21.x.1960 (*E. M. Reed*); Dubbo, *Eucalyptus sideroxylon*, 8 ♀, 3.viii.1959 (*E. M. Reed*); Cowra, *Eucalyptus* sp., 6 ♀, 1959 (*M. Casimir*); Hillston, no host, 6 ♀, 22.ix.1959 (*E. M. Reed*) (ANIC). QUEENSLAND: Gatton, no host, 1 ♀, 16.x.1932 (UQ); 3 ♀ syntypes of *Aeolothrips hyalinipennis*, Indooroopilly (Brisbane), on window, xii.1929 and 22.ix.1929 (Brisbane Museum T6525).

Andrewarthaia minor **sp. n.**

♀. Length about 1·7 mm. Colour medium brown, abdominal segments II to VII and extreme base of antennal III a little paler; wings uniformly fuscous. Body sculpture and chaetotaxy apparently not differing from small examples of *kellyana*.

Measurements (*in μ*)

	Antennal segments							Fore wing		Hind
	III	IV	V	VI	VII	VIII	IX	Length	Breadth	tibia
Holotype ♀	87	68	52	35	29	13	16	900	160	270

Material examined. Holotype ♀. NEW SOUTH WALES: Hillston, no host, 22.ix.1959 (*E. M. Reed*) (ANIC).

ARCUTHRIPS **gen. n.**

Antennae nine-segmented, segments V–IX connate; sensorium on III straight, long and narrow; sensorium on IV recurved in a broad U-shape around apex; both these sensoria with weak internal markings. Dorsal surface of head with two irregular rows of setae behind eyes; interocellar and postocellar setae a little stouter than postoculars; maxillary palps three-segmented, i.e. one small apical division. Pronotum without major setae; posterior margin with median pair of setae at least three times as far from each other as from the submedians. Mesonotal sculpture arcuate around anterior midpoint of sclerite (Text-fig. 39); posterior setae weak. Fore tarsus with stout claw. Fore wings fasciate. Abdominal sternites III–VII with accessory setae laterally; marginal setae twice as long as accessory setae or longer.

Type-species : *Desmothrips monrosi* De Santis.

Three species are included in this new genus, two from South America, *Desmothrips monrosi* De Santis, 1959 and *D. topali* Pelikan, 1964, and one from Australia and India, *Rhipidothrips cinctus* Hood, 1918. The metanotal sculpture of these species resembles that found in *Lamprothrips* but the antennal sensoria and abdominal chaetotaxy are quite different. Unfortunately neither of the two original females of *cinctus* have been examined during the present study. The species is known to the present author only from three females provisionally determined as this species by Miss Kellie O'Neill of the U.S.D.A., Washington, after comparison with the holotype. Miss O'Neill indicated that the three specimens could be interpreted as three different species as they differ in both size and colour, but such action would not be justified without further material from Queensland.

KEY TO SPECIES.

1 Median pair of posteromarginal setae on sternite VII closer to each other than to the submedians (Text-fig. 43) . . . . **cinctus** (p. 52)

– Median posteromarginal setae on sternite VII nearer to submedian setae than to each other (Text-fig. 44) 2

2 Antennal IV about 0·8 as long as III ; sensoria on III and IV about 0·75 the length of the segments . . . . **monrosi** (p. 52)

– Antennal IV almost equal in length to III ; sensorium on III about 0·55, on IV about 0·7 the length of the segment . . . . **topali** (p. 52)

The holotype of *monrosi* was kindly loaned by Professor Luis de Santis, La Plata University, Argentina, and paratype males and females of *topali* were loaned by Dr. J. Pelikan of the Czechoslovak Academy of Science.

Arcuthrips cinctus (Hood) **comb. n.**

(Text-fig. 43)

Rhipidothrips cinctus Hood, 1918 : 121–122.

This species was based on two females collected by A. Girault at Cooktown, Queensland, on the 4th and 24th February, 1912. As indicated above, there is a possibility that the two Australian specimens on which the following notes are based are not conspecific with the holotype of *cinctus*, and the redescription is therefore limited to characters visible in both preparations.

♀. Length 1·3 to 1·6 mm. Colour brown ; abdominal segments IV and V, and antennals III and IV yellow (in the smaller specimen antennal IV is shaded brown and II is pale). Antennae with nine segments ; sensoria on III and IV linear, not quite straight, curving around apex of segments, with internal markings similar to *D. bagnalli* (Text-fig. 23). Head with two irregular rows of setae behind eyes ; setae between and behind ocelli a little stouter than those behind eyes ; transverse lines of sculpture on vertex bear numerous microtrichia ; maxillary palps three-segmented. Pronotum without major setae ; mesonotum with one pair of median setae ; metanotal sculpture arcuate around anterior midpoint but with a few broader reticulations at posterior. Fore tarsi with a stout tooth. Fore wings dark in apical eighth and median third (wings missing in dark specimen). Abdominal sternite VII with five pairs of long posteromarginal setae, the median pair closer to each other than to the submedian ; about five pairs of accessory setae on VII, much shorter than the marginal setae ; accessory setae also present laterally on sternites III to VI (Text-fig. 43).

Measurements (*in* μ)

	Antennal segments							Hind tibia	Fore wing
	III	IV	V	VI	VII	VIII	IX		
Holotype ♀ (Hood, 1918) .	83	72	45	31	33	20	15	?	830
Pale ♀	80	74	45	35	33	26	16	240	830
Dark ♀	117	105	65	55	42	29	19	300	?

Material examined. QUEENSLAND : Halifax, sweeping along roadside, 1 ♀ (dark specimen), 4.iii.1913 (*A. Girault*) ; Nelson, sweeping in forest, 1 ♀ (pale specimen), 10.iv.1914 (*A. Girault*). USNM.

INDIA : Secunderabad, on grass, 1 ♀, 3.viii.1964 (*T. N. Ananthakrishnan* 176) (USNM).

CRANOTHRIPS Bagnall

Cranothrips Bagnall, 1915 : 315–316. Type-species : *C. poultoni* Bagnall, 1915, by monotypy.

Antennae nine-segmented, all segments distinctly separate ; segments III to IX with rings of microtrichia as in *Orothrips*, major setae restricted to apex of segments ; sensoria on III and IV short, parallel to apical border of segment ; antennal I produced at inner margin into serrate lobe almost reaching apex of II. Head without interantennal projection, with three pairs of ocellar setae and four pairs of postoculars ; maxillary palps three-segmented. Pronotal setae long, two pairs of postero-angulars, five pairs along hind margin, and one medial pair just within the hind margin. Mesonotum with one pair of long median setae. Fore tarsi without the claw found in many Aeolothripidae. Wings broad, narrowed to apex ; venal and scale setae long (fig. 11). Abdominal tergite VIII with two pairs of long setae submedially close to posterior margin ; sternites with accessory setae ; ♂ abdomen without appendages.

This genus is very close to *Ankothrips*, from which it can be separated by the presence of a serrate lobe on antennal I, whereas *Ankothrips* species have a similar lobe on antennal II. In view of the variation in length of this lobe in the South African species *Cranothrips karrooensis* Jacot-Guillarmod, 1937 it is possible that these two genera are not truly distinct. There are three species included in *Cranothrips*, two Australian and one South African, and these may be separated as follows.

1 Sternite VII with the two pairs of submedian marginal setae much shorter than the median marginals ; tergite VIII with the median setae further from the hind margin than the median pori ; wings weakly shaded ; process on antennal I sometimes not developed . . . . **karrooensis** (p. 53)
– Sternite VII with the submedian marginal setae as long as the median marginals ; tergite VIII with the median setae closer to the hind margin than the pori . . 2
2 Fore wing with dark and light transverse bands ; pronotum with submedian pair of anteromarginal setae twice as long as median pair ; metanotal sculpture arcuate around anterior midpoint . . . . **poultoni** (p. 54)
– Fore wing uniformly fuscous ; anterior margin of pronotum without any longer setae ; metanotal sculpture arcuate around posterior margin . . . **emersoni** (p. 54)

Cranothrips emersoni Girault

Cranothrips emersoni Girault, 1929 : 1.

Girault described this species as follows : " From genotype : all black, wings grey, bristles on costa only 29 ; antennal appendage pale, apex obliquely truncate, serrate."

The only known specimens are the two syntype females.

♀. Length 1·3 to 1·4 mm. Colour uniform mid-brown, scale of antennal I paler ; wings uniformly fuscous ; hypodermal pigment light red ; head and antennae very similar to *poultoni* (fig. 10). Pronotum with two pairs of postero-angular setae (75 μ) ; five pairs of posteromarginal setae, the submedian longest (55 μ), the lateral three pairs small (25 μ) ; midlateral and antero-angular setae rather longer than remaining pronotal setae. Metanotum with weak sculpture arcuate around posterior. Wing chaetotaxy similar to *poultoni*, fore wing 85 μ long. Tergites and sternites with rows of microtrichia laterally ; median setae of tergite VIII 35 μ long ; sternites III to VI with complete transverse row of accessory setae.

Syntypes, 2 ♀. QUEENSLAND: Sunnybank (Brisbane), *Boronia*, forest, 14.viii.1929 (Brisbane Museum T6523 & T6524).

Cranothrips poultoni Bagnall

(Text-figs. 9, 10, 11 & 41)

Cranothrips poultoni Bagnall, 1915 : 316.

♀. Length 1·6 to 1·7 mm. Colour mid-brown, setae dark ; tarsi paler, scale of antennal I yellow. Antennae and head as in generic description (Text-figs. 9 & 10). Pronotal postero-angular setae 85–90 μ long ; submedian posteromarginal setae 70 μ long ; submedian anteromarginal setae 55 μ long ; midlateral and antero-angular setae elongate, and at least one pair of major setae on pronotal disc. Mesonotum with a pair of pores at anterior, one pair of median setae (65 μ). Metanotal sculpture arcuate around anterior midpoint, similar to *Lamprothrips* ; posterior setae minute. Fore wing with first and third quarters pale ; costa dark around distal pale band. Fore wing 95 μ long, maximum breadth 16 μ ; posteromarginal cilia straight (cf. wavy in original description). Abdominal tergites and sternites with rows of microtrichia laterally ; median setae of tergite VIII 70 μ long ; sternite VII with six pairs of posteromarginal setae, three pairs of accessory setae laterally ; sternites III to VI with four pairs of marginal setae, about nine pairs of accessory setae in a continuous transverse row (Text-fig. 41).

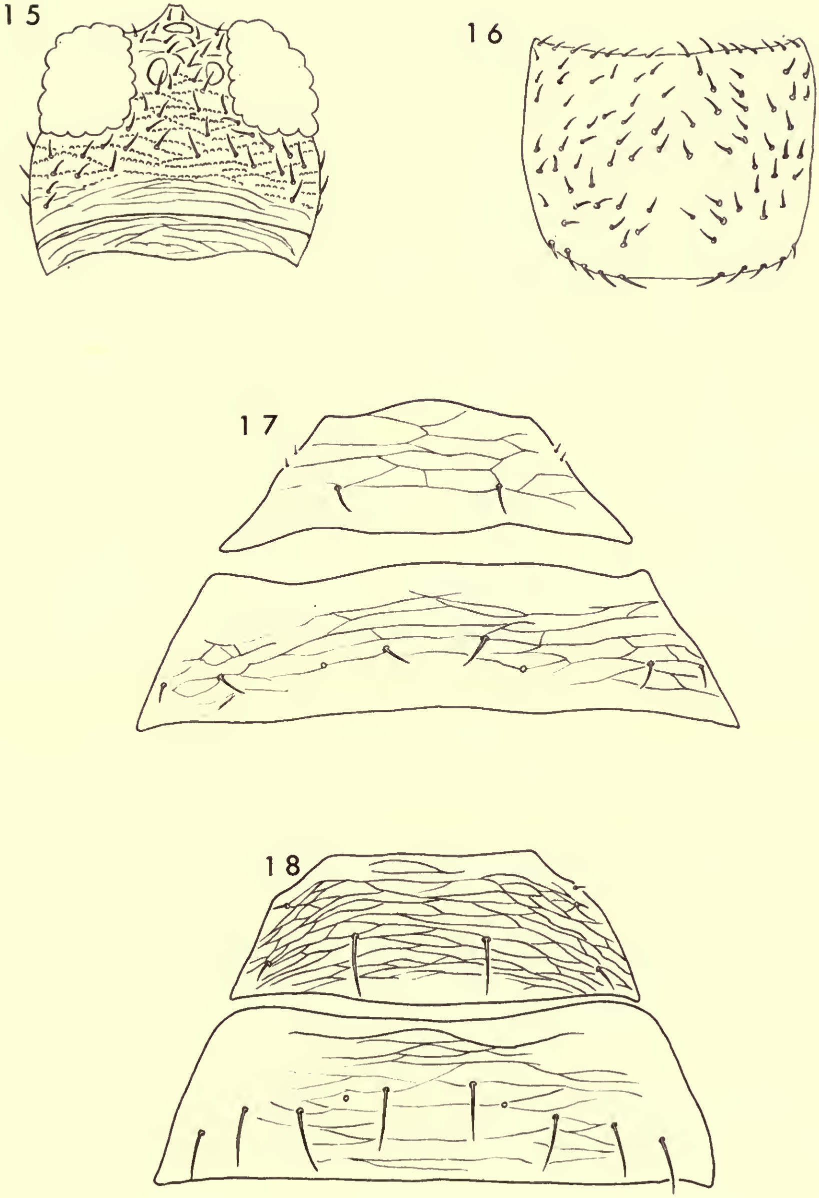
♂. Length 1·1 mm. Colour paler than female. Abdomen without tubercles or sickle shaped bristles ; sternites III to VIII with six to eight pairs of setae not clearly distributed on margin or submargin.

LECTOTYPE ♀. WESTERN AUSTRALIA : nr. Freemantle, on flowers, viii.1914 (*E. B. Poulton* no. 17) (BMNH).

The specimen here designated as lectotype was marked " Type " by the original author, although not mentioned as such in his description. There are one female and two males bearing the same data as the type in the British Museum (Natural History).

DESMOTHRIPS Hood

Desmothrips Hood, 1915 : 57. Type-species, *Orothrips australis* Bagnall, 1914, by monotypy.
Archaeolothrips Bagnall, 1924*b* : 627. Type-species, *A. fontis* Bagnall, 1924, by monotypy.
Desmothrips Hood ; Bagnall & Kelly, 1928 : 204.
Desmothrips Hood ; Steele, 1940 : 353–354.



FIGS. 15–18. 15–17, *Desmothrips steeleae*. 15, Head. 16, Pronotum. 17, Abdominal tergites I and II. 18, *D. reedi*, abdominal tergites I and II.

Vespiform appearance similar to *Aeolothrips*. Antennae nine-segmented ; V–IX connate but not forming so distinct a club as in *Aeolothrips* ; sensoria on III and IV elongate, linear, occasionally sinuate, curving around distal extremity of segment (Text-figs. 19–22). Numerous small setae between and behind eyes on dorsal surface of head (Text-fig. 15) ; mouth cone long, reaching almost to base of prothorax. Distal (second) segment of maxillary palps divided into six in female but sometimes only into two in male. Labial palps three- or four-segmented. Pronotum without major setae but with numerous small setae (Text-fig. 16). Fore tarsi with stout recurved claw and spine. Mesonotum usually with accessory median setae in addition to the usual pair of major median setae, without a pair of pores at the anterior apex (Text-figs. 27 & 28). Metanotum completely reticulate, reticles usually with pronounced internal markings ; two pairs of metanotal setae, one pair at anterior rather widely spaced, one pair at posterior (Text-figs. 27–34). Fore wings usually fasciate (Text-figs. 1–7), not strongly constricted at base ; costal fringe not much enlarged, posterior fringe cilia straight. Abdominal sternites of female with accessory setae laterally and frequently medially as well. Sternite VII with five or more pairs of marginal setae (except *mendozai*) (Text-figs. 45–53). Male abdomen without dorsal tubercles, claspers or the sickle shaped setae found in some *Aeolothrips* species, but with a variable number of sternal accessory setae.

The species included in *Orothrips* have all the antennal segments clearly distinct from each other as in *Cranothrips* (Text-fig. 9), whereas in *Desmothrips* species segments five to nine are connate, broadly articulated one to another, forming a more or less distinct club.

The genus *Desmothrips* was last revised by Steele (1940), who established that the characters originally used for the separation of the species were too variable to be of value by themselves. Steele only recognized three species as valid, *australis*, *davidsoni* and *tenuicornis*, regarding the other forms as synonyms of *australis*. Unfortunately the types were not examined. In the present study it has been found possible to establish new characters upon which many of the original taxa may be distinguished by comparing Miss Steele's material with the type specimens as well as much other material.

KEY TO SPECIES

1 Reticulations on metanotum without internal markings 2
– Reticulations on metanotum with internal sculpture of either lines, dots or wrinkles (Text-figs. 29–33) 3
2 Antennal III yellow at apex but brown at base ; fore wing dark with a pale area on the anterior margin sub-basally and subapically (Text-fig. 6) ; sternite VII with 5 pairs of marginal setae, these are not much longer than the accessory setae (Text-fig. 53) ***uniguttus*** (p. 71)
– Antennal III brown, a little paler at base than apex ; fore wing shaded with a sub-basal diffuse pale area near the hind margin ; sternite VII with 3 pairs of marginal setae, these are about twice as long as the accessory setae (Text-fig. 47) ; male sternite IX without accessory setae, sternites III–VIII with about 10 accessory setae . . . . ***mendozai*** (p. 62)
3 Body strongly bicoloured, abdominal segments II and III and antennal III yellow, remainder of body brown . . . . ***reedi*** sp. n. (p. 66)
– Body not strongly bicoloured although antennal III sometimes yellow . . . 4
4 Metanotal reticles with only a few linear markings (Text-figs. 32 & 33) ; sternites V and VI of female with less than three pairs of accessory setae, usually only one . 5
– Metanotal reticles with numerous small wrinkles or dots (Text-figs. 29–31) ; sternites V and VI of female with three or more pairs of accessory setae, although these are sometimes placed laterally 6

5 Sensoria on III and IV vermiform (Text-fig. 22) ; distal pale area of fore wing continuous across wing, almost parallel-sided, with marginal veins much paler than around dark areas (Text-fig. 2) ; male sternite IX usually without accessory setae, sternites VII and VIII with 6 to 10 accessory setae in an irregular transverse row **steeleae** sp. n. (p. 66)

– Sensoria on III and IV linear, scarcely wavy ; distal pale area not continuous across fore wing, costal vein dark in region of pale area ; male unknown . . **obsoletus** (p. 63)

6 Costal vein as dark around distal pale area of fore wing as around the dark areas ; distal pale area much wider at costal margin than at posterior margin of fore wing, or not reaching posterior margin at all 7

– Costal vein much paler around distal pale area of fore wing than around dark areas, usually not shaded at all ; distal pale area continuous across wing, almost parallel-sided 8

7 Sensoria on antennals III and IV with internal discoid markings (Text-fig. 23) ; antennal III dark in apical half or more ; distal pale area of fore wing reduced to a spot between anterior margin and second vein (Text-fig. 4) ; male sternite IX with 4 accessory setae, sternites VII and VIII with 1 or 2 pairs placed laterally **bagnalli** (p. 60)

– Antennal sensoria without internal markings ; antennal III dark only at extreme apex in female but in apical third or more in male ; distal pale area of fore wing variable, sometimes as in *bagnalli* but commonly extending to or almost to hind margin of wing, in this case much wider at anterior than posterior margin (Text-figs. 5 & 7) ; male sternite IX with 2 to 4 pairs of accessory setae, sternite VIII with 2 to 3 pairs, sternite VII with 3 to 4 pairs . . . **propinquus** (p. 65)

8 Antennal III clear yellow, rarely shaded at extreme apex ; distal pale area of fore wing longer than wing breadth ; antennal IX two-thirds as long as VIII or shorter ; male sternite IX with 3 or 4 pairs of accessory setae, sternites III to VIII with almost complete row of accessory setae . . . . . **tenuicornis** (p. 68)

– Antennal III dark in apical third or half ; distal pale area of fore wing shorter than wing breadth ; male sternite IX with about 6 pairs of accessory setae, sternites VII and VIII with two transverse rows of accessory setae . . . **australis** (p. 57)

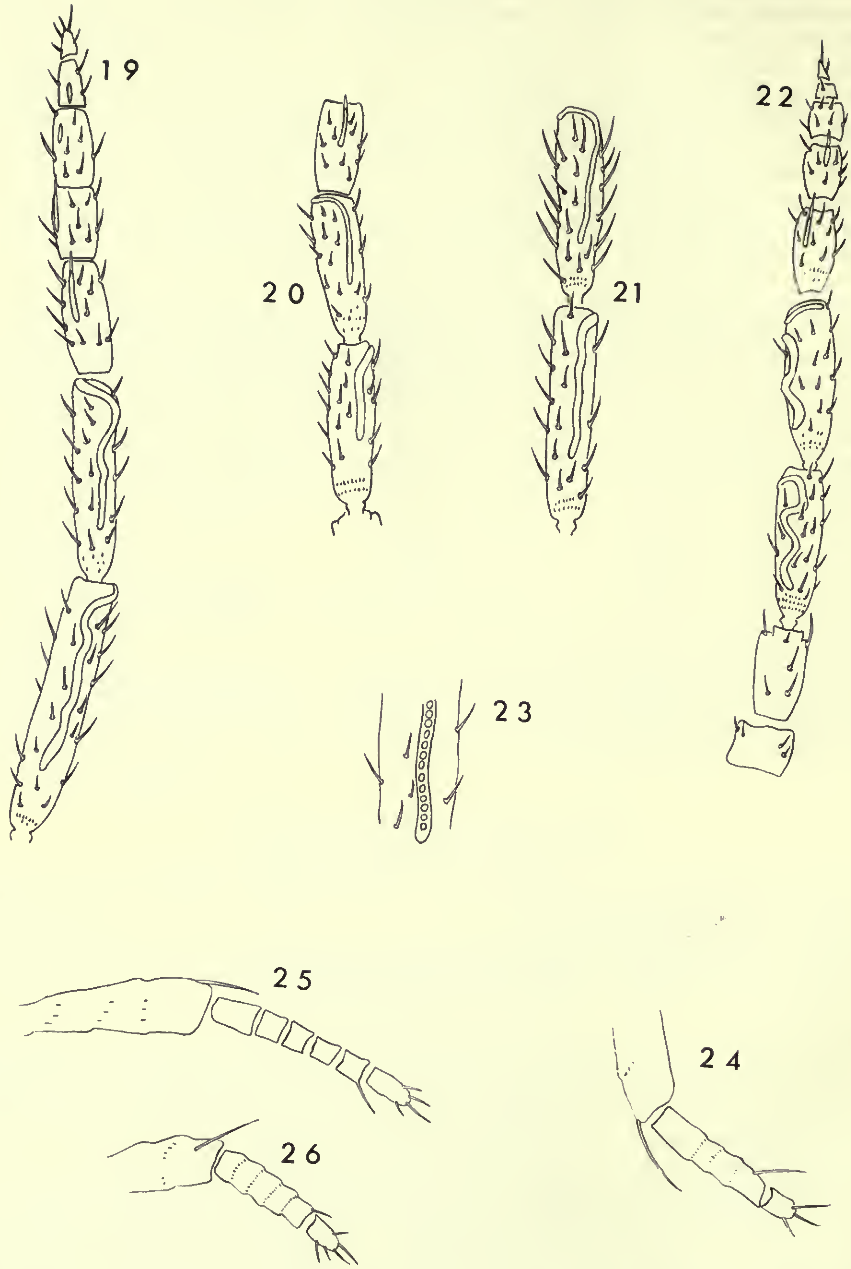
Desmothrips australis (Bagnall)

(Text-figs. 1, 20, 27, 29 & 45)

Orothrips australis Bagnall, 1914 : 287.
Desmothrips australis (Bagnall) Hood, 1915 : 57.
Archaeolothrips fontis Bagnall, 1924*b* : 627.
Desmothrips australis (Bagnall) ; Bagnall & Kelly, 1928 : 204.
Desmothrips australis (Bagnall) ; Steele, 1940 : 353–354 (in part).

Bagnall first described this species from a single female collected at Healesville, Victoria, and most of the subsequent records are from that locality. In the latest revision of the group the name *australis* was used by Steele to include *bagnalli*, *obsoletus* and *propinquus*. These species may be separated by means of the above key but it may be useful to consider their differences here in more detail.

The relative lengths of antennal segments III and IV are quite variable, not only in these four species but also in *tenuicornis*. As Steele has shown, these relative measurements are not sufficient by themselves to separate the species. For example the ratio, antennal III/antennal IV, is 1·17 for the right and 1·31 for the left antenna in the type specimen of *australis*. The extent of the brown shading on the apex of the third antennal segment is variable in both *bagnalli* and *australis*, in both of which



FIGS. 19–26. 19–23, Antennae of *Desmothrips* species. 19, *D. tenuicornis*. 20, *D. australis*. 21, *D. reedi*. 22, *D. steeleae*. 23, *D. bagnalli*, sensorium on antennal III. 24–26, Maxillary palps. 24, *D. steeleae*, ♂. 25, *D. steeleae*, ♀. 26, *Aeolothrips fasciatus*.

species the apical half or apical third is brown, but in *propinquus* this shading is restricted fairly constantly to the extreme apex. On the other hand the extent of the distal pale area on the fore wing is highly variable in *propinquus* but is quite constant in *australis*. In *propinquus* the costal vein around the distal pale area is dark, and the pale area may barely reach the second vein or may extend fully to the hind margin. In *australis* the costal vein is not dark at the distal pale area, and this pale area is parallel-sided, extending fully across the wing. The wing colour of *bagnalli* is very like an extreme form of *propinquus*, with the pale area restricted anterior to the second vein, but this species is easily recognized by the beaded antennal sensoria. The fourth species mentioned above, *obsoletus*, can be recognized from the metathoracic sculpture as belonging in a very different section of the genus. Figure " A " in the paper by Steele is here considered to represent the wing of *australis* Bagnall.

Archaeolothrips fontis was described by Bagnall from a single male which was later recognized by Bagnall and Kelly as the male of *Desmothrips australis*. This specimen was collected with two females of *tenuicornis*, but comparison with the known male of that species and one other male specimen of *australis* makes its identity clear. Pigmentation is very similar to the female, and the seventh, eighth, and ninth abdominal sternites have two irregular transverse rows of accessory setae.

♀. Length 1·4–1·8 mm. Colour dark brown ; antennal III yellow in basal half or two-thirds ; distal pale area of fore wing usually parallel-sided, extending right across wing, marginal veins pale around this area. Sensoria on antennals III and IV linear, almost straight, two-thirds the length of these segments, usually without internal markings (Text-fig. 20). Sensoria on antennals V and VI less than half the length of these segments. Mesonotum with two or three pairs of accessory median setae. Metanotum reticulate, reticles completely filled with fine wrinkles (Text-figs. 27 & 29). Sternite VII with median pair of accessory setae usually just lateral to the submedian pair of marginals (Text-fig. 45).

♂. Length 1·3 mm. Colour similar to female but median abdominal segments paler. Head and thorax as in female, distal maxillary palp segment with one small apical subdivision. Sternites III to IX with accessory setae, VIII with about 8 pairs in two transverse rows.

Measurements (*in* μ)

	Antennal segments							Fore wing		Hind	Tergite IX			Tergite X	
	III	IV	V	VI	VII	VIII	IX	L	B	tibia	B_1	B_2	B_3	B_1	B_2
Holotype ♀	89	68	44	28	19	14	14	830	130	250	130	?	?	140	?
♀ (RK 150)	82	77	47	26	21	14	14	850	140	260	130	135	130	135	150
♀ (RK 147)	94	73	47	28	26	14	14	910	150	270	130	150	130	145	150
♂ (*fontis*)	74	61	42	26	16	14	14	730	110	240	45	45	115	?	115

Material examined. Holotype ♀. VICTORIA : Healesville, *Xanthorrhoea australis* flowers, 12.x.1913 (*A. E. Shaw*) (BMNH).

VICTORIA : Box Hill, on roses, 7 ♀, 3.xi.1927 (*R. Kelly* n.s. 37) (BMNH & VM) ; Box Hill, no host, 9 ♀, x.1928 (*R. Kelly* n.s. 147) (BMNH & Cal. A. Sci.) ; Box Hill, " general ", 2 ♀, 21.x.1928 (*R. Kelly* n.s. 149) (BMNH & USNM) ; Box Hill, " general ", 1 ♀, xi.1928 (*R. Kelly* n.s. 150) (BMNH) ; Box Hill, " general ", 1 ♀, 15.xi.1928 (*R. Kelly* n.s. 151) (BMNH) ; Kalorama, *Prunella vulgaris*, 2 ♀, 9.ii.1933

(*H. V. Steele*) (HVS Coll.) ; Healesville, *Erythraea australis*, 1 ♂ (holotype of *A. fontis*), 21.xii.1913 (*A. E. Shaw* & *R. Kelly*) (BMNH) ; Box Hill, on rose, 1 ♂, 3.xi.1927 (*R. Kelly* n.s. 37) (BMNH). NEW SOUTH WALES : Brooklyn, sweeping forest lowland, 1 ♀, 9.xi.1914 (*A. Girault*) (USNM). WESTERN AUSTRALIA : Northam, blossom of native tree, 1 ♀, 11.iv.1932 (Cal. A. Sci) ; Perth, Michaelmas Daisy, 1 ♀, 5.iv.1932 (*L. J. Newman*); Perth, Dahlia, 1 ♀, 5.iv.1932 (*L. J. Newman*); Perth, flowers, 1 ♀, 6.iv.1932 (*W. Read*) ; Perth, flowers, 1 ♀, 14.iv.1932 (*B. A. O'Connor*) ; Mundaring, Gum blossom, 1 ♀, v.1932 (*B. A. O'Connor*) ; Spearwood, *Acacia*, 1 ♀, 31.viii.1932 (BMNH).

Desmothrips bagnalli Karny **sp. rev.**

(Text-figs. 4, 23 & 46)

Desmothrips bagnalli Karny, 1920 : 36.
Desmothrips bagnalli Karny ; Karny, 1924 : 7–11.
Orothrips unguttipennis Girault, 1926*a* ; Girault, 1926*b*.
Desmothrips comparabilis Priesner, 1928 : 643–645.
Desmothrips australis ; Steele, 1940 nec Bagnall, 1914 (in part).

The type specimen of *unguttipennis* Girault has been re-examined during the present study and compared with the holotype of *bagnalli*. As Girault (1926*b*) pointed out, his species is to be regarded as a synonym of Karny's. Kelly & Mayne (1934 : 13) indicated that *comparabilis* was the male of *bagnalli*, and through the courtesy of Dr. Priesner the present author has been able to examine the unique holotype and confirm this synonymy. No other species of *Desmothrips* are known to have the distinct discoid markings in the sensoria of antennals III and IV.

The figure labelled " F " in Steele (1940) of a specimen collected at Montville, Queensland, and considered by her to represent a form of *australis*, is here considered to refer to *bagnalli*. This specimen is a male, but a female was collected in the same month from Nambour, a town about five miles distant from the Montville locality. These two localities are within one hundred miles of the type locality, Mount Tambourine, near Brisbane.

♀. Length about 1·7 mm. Colour dark brown, fore tarsi and apex of fore tibiae paler. Antennal III yellow in basal half or two-thirds. Distal pale area of fore wing restricted anterior to second vein, costal vein dark in this region (Text-fig. 4). Sensoria on antennals III and IV weakly sinuate, with internal discoid markings (Text-fig. 23), rather more than three-quarters of the length of these segments. Sensoria on V and VI about half the length of the segments. Mesonotum with two pairs of accessory median setae ; metanotum reticulate, very similar to *australis*. Accessory setae absent medially on sternites V, VI and VII (Text-fig. 46).

♂. Length 1·2–1·3 mm. Colour dark brown similar to female, median abdominal segments paler and antennal III with more extensive brown shading. Head and thorax as in female, distal maxillary palp segment with one small apical subdivision. Sternites VI to IX with accessory setae, VI to VIII with 1 or 2 pairs laterally, IX with 2 pairs medially.

Measurements (*in* μ). Fore wing length/breadth : 940/150. Hind tibia : 310. Antennals I–IX : 39 ; 57 ; 104 ; 83 ; 47 ; 37 ; 26 ; 13 ; 13. Tergite X setae 1, 2 and 3 : 170, 180, 185. Tergite X setae 1 and 2 : 170, 180.

Material examined. Holotype ♀. QUEENSLAND : Mt. Tambourine, in flowers, October, 1910–1913 (*E. Mjöberg*) (Naturhistoriska Riksmuseum, Sweden).

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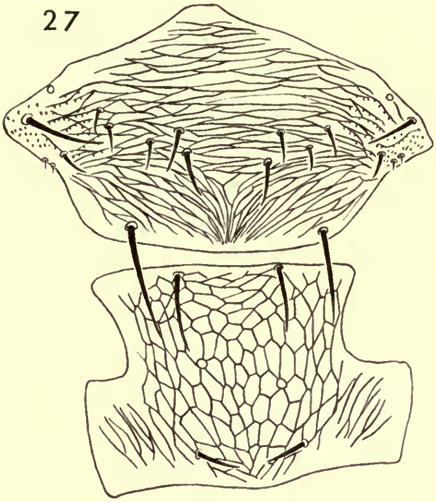

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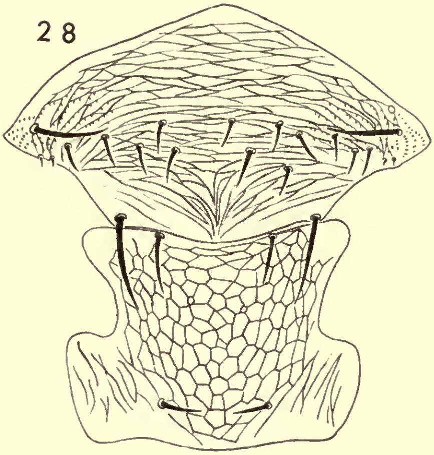

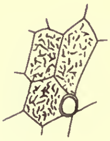

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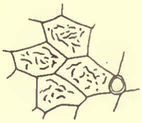

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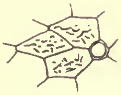

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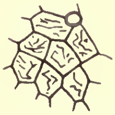

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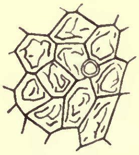

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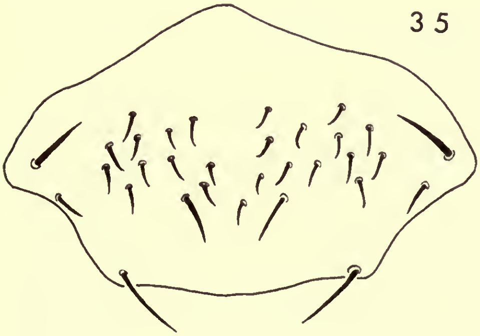

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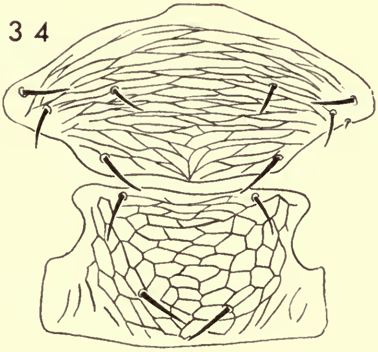
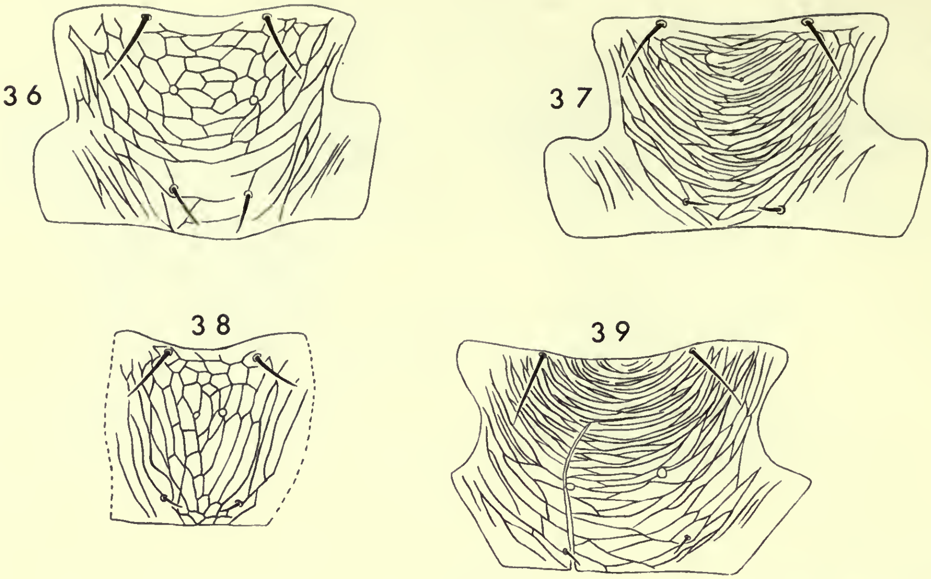


FIGS. 27–35. 27, *Desmothrips australis*, mesonotum and metanotum. 28, *D. steeleae*, mesonotum and metanotum. 29–33, Details of metanotal reticulations. 29, *D. australis*. 30, *D. tenuicornis*. 31, *D. propinquus*. 32, *D. obsoletus*. 33, *D. steeleae*. 34, *D. reedi*, mesonotum and metanotum. 35, *Andrewarthaia kellyana*, mesonotum (sculpture omitted).



FIGS. 36–39. Metanotal sculpture. 36, *Aeolothrips fasciatus.* 37, *Lamprothrips maculosus.* 38, *Desmothrips mendozai.* 39, *Arcuthrips monrosi.*

QUEENSLAND: Nambour, in garden flowers, 1 ♀, 9.ix.1938 (*N. E. H. Caldwell*) (HVS Coll.); Montville, in garden flowers, 1 ♂, 15.ix.1938 (*N. E. H. Caldwell*) (HVS Coll.); Botanic Garden, Brisbane, on rose, 1 ♂ (holotype of *comparabilis*) (*Hardy*) (Priesner Collection, Austria); Beenleigh, forest, 2 ♀ (syntypes of *unguttipennis*), 4.xii.1922 (1923 in description) (Brisbane Museum T6526).

Desmothrips mendozai Girault

(Text-figs. 38 & 47)

Desmothrips mendozai Girault, 1932: 6.

The original description of this species was as follows: " From *uniguttus*: Wing 1 fuscous save basal 1/4, antennae entirely fuscous. Second ring-vein half-way to third. Mundaring, W. Aus., L. J. Newman, Feb. 25, 1931. Second wing hyaline." Unfortunately no material of *mendozai* could be found in the Girault Collection at Brisbane Museum, but two females and one male determined as this species apparently by L. J. Newman and bearing the original data of *mendozai* were kindly made available by the Department of Agriculture of Western Australia. One of these females, bearing the Moulton Collection Number 5085, is labelled " Type ", although this is not in Girault's handwriting, and this specimen is now deposited at the Brisbane Museum. The species is distinguished from other *Desmothrips* species by having only three pairs of marginal setae on sternite VII.

♀. Length 1·8–2·0 mm. Colour dark brown with orange-red hypodermal pigment; fore tibiae with longitudinal pale brown mark; antennal III paler at base than at apex; fore wing shaded, paler in basal quarter but base of scale very dark. Antennal segments as in other *Desmothrips* species, but sensorium on III not curving around apex of segment, and sensoria on V and VI with circular not elongate bases. Head crushed laterally in available specimens but the male has only one row of setae behind eyes ; distal maxillary palp segment with six divisions ; labial palps with four divisions. Pronotum without major setae ; mesonotum with two pairs of accessory median setae ; elongate reticles of metanotum without internal sculpture (Text-fig. 38). Fore tarsi with stout claw and seta. Fore wings rather broad, venal setae shorter than the distance between them, scale with eight marginal setae. Sternites II to VII with accessory setae in an irregular transverse row ; sternite VII with only three pairs of marginal setae ; median pair of accessory setae about anterior to median marginals and only half their length (Text-fig. 47).

♂. Length 1·5 mm. Colour paler than in female, anterior abdominal segments yellowish. Distal maxillary palp segment with six small divisions. Mesonotum without accessory median setae. Sternite IX without accessory setae ; sternites III to VIII with about 10 accessory setae in an irregular transverse row.

Measurements (*in μ*). Fore wing length/breadth : 900/180. Hind tibia : 280. Antennals I–IX : 23 ; 35 ; 61 ; 51 ; 35 ; 28 ; 28 ; 10 ; 13. Tergite IX setae 1, 2 and 3 : 135, 145, 145. Tergite X setae 1 and 2 : 135, 135. Male tergite IX setae 1, 2 and 3 : 32, 48, 113.

Material examined. WESTERN AUSTRALIA : Mundaring, sweepings, 2 ♀, 1 ♂, 25.ii.1931 (*L. J. Newman*) (BMNH, and Brisbane Museum).

Desmothrips obsoletus Bagnall **sp. rev.**

(Text-figs. 32 & 48)

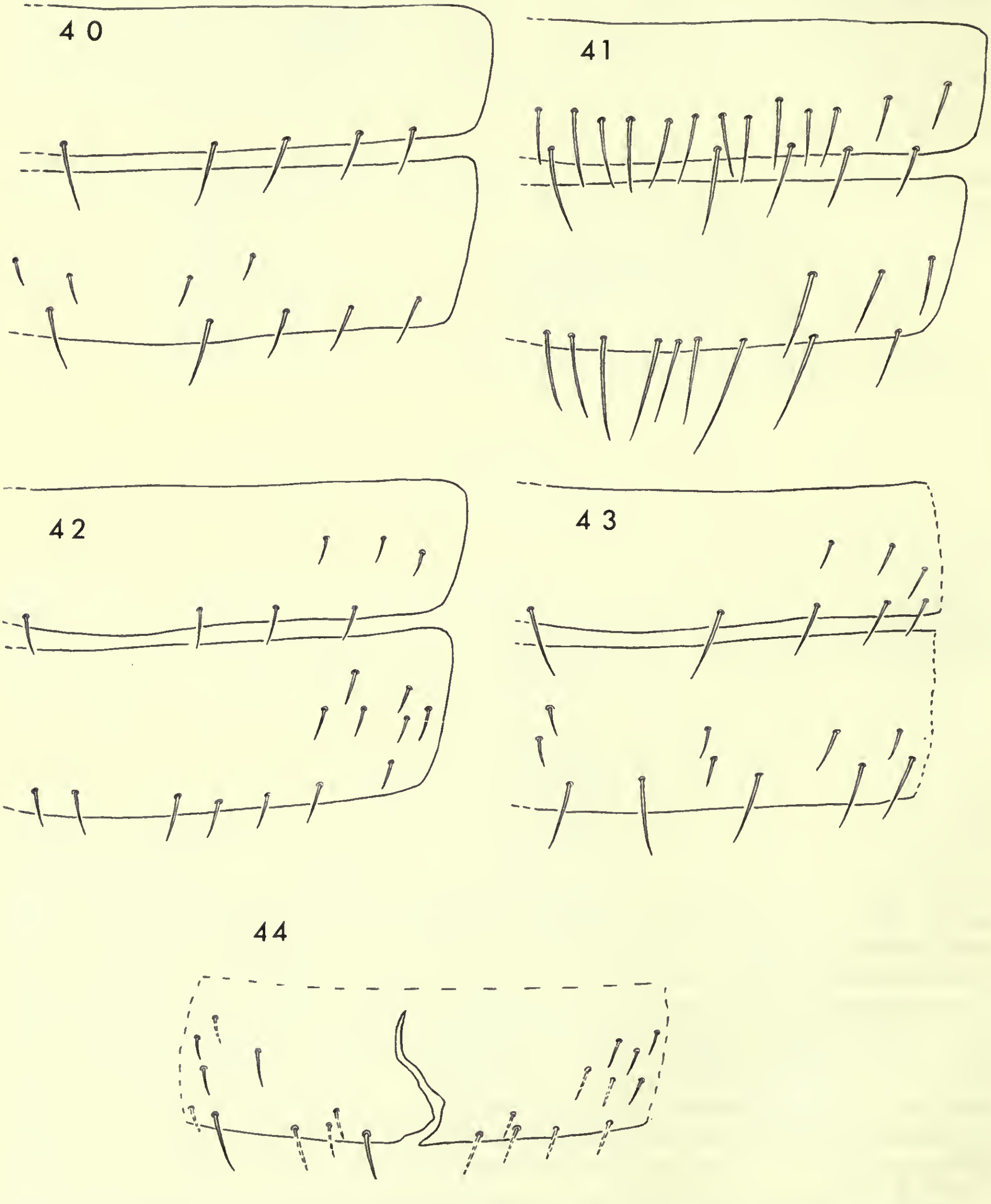
Desmothrips obsoletus Bagnall, 1924*b* : 626–627.

Steele (1940), from the original description, considered that *obsoletus* was a synonym of *australis*. However on the basis of the sternal chaetotaxy and the markings within the metanotal reticulations, these two species fall in very different sections of the genus. The species is known only from the holotype female which is mounted laterally on a slide. It has not proved possible to remount this specimen dorso-ventrally and so the metanotum and wings have been dissected free to allow them to be examined. Two females loaned from the Brisbane University collection bear the following data : QUEENSLAND, Crows Nest, on Wattle, 26.viii.1949 (*C. S. Andrew*). The wings of these specimens are fuscous, the distal pale area being little paler than the rest of the fore wing. They are otherwise very similar to the *obsoletus* holotype.

♀. Length 2·0 mm. Colour dark brown, fore tarsus and distal part of fore tibia lighter brown. Antennal III light brown basally, but darker at apex and along dorsal surface of apical half. Antennal II lighter in apical third, antennal IV very little paler than rest of body. Dark area of fore wing extensive, distal pale area extends to second vein in one wing and just posterior to this in the other ; costal vein dark around distal pale area. Sensoria on antennals III and IV linear, broad, barely sinuate, rather more than half the length of these segments. Head apparently very short, with only one row of setae behind the eyes. Metanotum reticulate, each reticle marked internally with short lines (Text-fig. 32). Sternites V and VI without accessory setae, VII with 3 pairs placed laterally (Text-fig. 48).

Measurements (*in μ*). Fore wing length/breadth : 1100/210. Hind tibia : 350. Antennals I-IX : 39 ; 57 ; 96 ; 80 ; 52 ; 34 ; 24 ; 13 ; 13. Tergite IX setae 1, 2 and 3 : 150 ; 180 ; 145. Tergite X setae 1 and 2 : 210 ; 210.

Material examined. Holotype ♀. VICTORIA : Melbourne, Brighton Beach, *Mesembryanthemum* growing in sand, 8.xii.1923 (*R. Kelly*) (BMNH).



Figs. 40–44. Chaetotaxy of sternites VI and VII. 40, *Aeolothrips fasciatus*. 41, *Cranothrips poultoni*. 42, *Lamprothrips maculosus*. 43, *Arcuthrips cinctus*. 44, *Arcuthrips monrosi*.

Desmothrips propinquus (Bagnall) sp. rev.

(Text-figs. 5, 7, & 49)

Orothrips propinquus Bagnall, 1916 : 397.
Desmothrips propinquus (Bagnall) Bagnall & Kelly, 1928 : 205.
Desmothrips elegans Morison, 1931 : 451–453, **syn. n.**
Desmothrips australis ; Steele, 1940 nec Bagnall, 1914 (in part).

The differences between *propinquus* and *australis* have been discussed above under the latter species. The illustrations B, C, D and E given by Steele (1940) are regarded here as representing various wing forms of *propinquus*. Morison (1930) suggested that *elegans* might be related to *bagnalli* and stated that his species differed from *propinquus* by the markings of the fore wings. However in the specimen of *propinquus* here designated as lectotype the distal pale area of the fore wing does not reach the hind margin contrary to the impression given by Bagnall's description. In the right wing about half of the area between the hind margin and the second vein is dark, and in the left wing about a third. The difference is small between this condition and *elegans*, in which the whole of the area posterior to the second vein is dark.

♀. Length 1·7–2·0 mm. Colour dark brown, fore tarsi and tibiae paler. Antennal III yellow, brown at extreme apex with some shading extending proximally along inner apical margin ; base of IV and apex of II paler brown. Distal pale area of fore wing variable, sometimes restricted anterior to second vein, sometimes extending to hind margin ; costal vein dark in region of distal pale area (Text-figs. 5 & 7). Sensoria on antennals III and IV linear, straight, without internal markings, two-thirds to three-quarters the length of these segments ; sensoria on IV and V about half the length of these segments. Vertex with numerous small setae between and behind eyes. Mesonotum with three or more pairs of accessory median setae. Metanotum reticulate, internal markings of reticles not as extensive within each reticule as in *australis*. Sternite VII with median pair of accessory setae often mesad of the second pair of marginal setae. Accessory setae on sternite VI form an almost complete transverse row (Text-fig. 49).

♂. Length 1·2–1·5 mm. Colour similar to female, but median abdominal segments paler and brown shading on antennal III more extensive. Head and thorax as in female, distal maxillary palp segment with six small subdivisions. Accessory setae present on sternites III to IX, irregular in number (4 to 8) but in a single transverse row on sternites III to VIII, in two rows on sternite IX.

Measurements (*in* μ)

		Antennal segments							Fore wing		Tergite IX setae			Tergite X setae	
	Hind tibia	III	IV	V	VI	VII	VIII	IX	L	B	1	2	3	1	2
Lectotype ♀	300	90	90	45	32	26	16	16	990	170	?	?	175	?	170
♀ ex Hillston	260	80	71	42	29	26	13	13	930	140	140	145	145	155	160
♀ ex Hillston	330	105	90	49	33	26	16	16	1080	190	150	165	170	160	175

Material examined. LECTOTYPE ♀ (present designation). VICTORIA, Creswick, on sweet pea, 17.i.1915 (*R. Kelly*) (BMNH). This specimen was labelled "Type" by the original author. No material is deposited in the University Museum, Oxford, although this was given as the depository in the original description.

Paratype. 1 ♀ collected with the lectotype (BMNH). VICTORIA : Mildura, 1 ♀, 5 ♂, 29.ix.1926 (*H. W. Davy*) (Cal. A. Sci.) ; Warrugal, 1 ♀, 23.x.1944 (HVS Coll.). TASMANIA : no locality or host, 1 ♀, ?1942 (*J. W. Evans*) (HVS Coll.). SOUTH AUSTRALIA : Adelaide, on lucerne and rose bushes, 4 ♀ (holotype and paratypes of *elegans*), x.1929 (*J. Davidson*) (BMNH & WI) ; Adelaide, on roses, 8 ♀, 2 ♂, 1932 (*J. W. Evans*) (HVS Coll.) ; Jamestown, lucerne flowers, 2 ♀, 15.ii.1953 (*D.C.S.*) ; Waite Institute, on lucerne, 3 ♀, 24.iii.1953 (*D.C.S.*) (WI) ; NEW SOUTH WALES : Gogeldrie, *Hordeum leporinum*, 1 ♀, 19.ix.1959 (*E. M. Reed*) ; Hillston, *Polygonum hydropiper*, 14 ♀, 4 ♂, 23.ix.1959 (*E. M. Reed*) (ANIC). QUEENSLAND : Kingaroy, on cotton and lucerne, 7 ♀, 15.i.1941 (UQ).

Desmothrips reedi n. sp.

(Text-figs. 18, 21, 34 & 50)

This new species is based on a single micropterous female which is very reminiscent of the common Holarctic species *Aeolothrips albicinctus* Haliday. The second and third abdominal segments are clear yellow contrasting with the remainder of the brown body. In *Arcuthrips cinctus* the fourth and fifth abdominal segments are yellow. The species is named in honour of Mr. E. M. Reed who collected much of the material upon which this paper is based.

♀ (micropterous) : Length fully expanded 2·0 mm. Colour brown, tarsi light brown ; antenna III yellow with apical rim dark, antennal IV with base light brown ; abdominal segments II and III clear yellow, apical margin of II brown. Sensoria on antennals III and IV rather sinuate, about three-quarters the length on these segments ; sensoria on V and VI linear, about half the length of these segments (Text-fig. 21). Eyes prolonged posteriorly on ventral surface of head with a few large ommatidia. Ocelli reduced, numerous small setae between and behind eyes. Prothoracic setae numerous, small ; fore tarsus with stout recurved tooth. Mesonotum with only one pair of median setae. Metanotum without a pair of pores, transversely reticulate, numerous wrinkles within each reticle (Text-fig. 34). Abdominal tergite I with numerous transverse anastomozing lines (Text-fig. 18) ; tergites II to VIII with four or five pairs of setae each one-third to one-half the length of the tergite. Major setae on segments IX and X not very long, extending little beyond apex of abdomen. Median pair of accessory setae on sternite VII lateral to the submedian pair of marginal setae (Text-fig. 50).

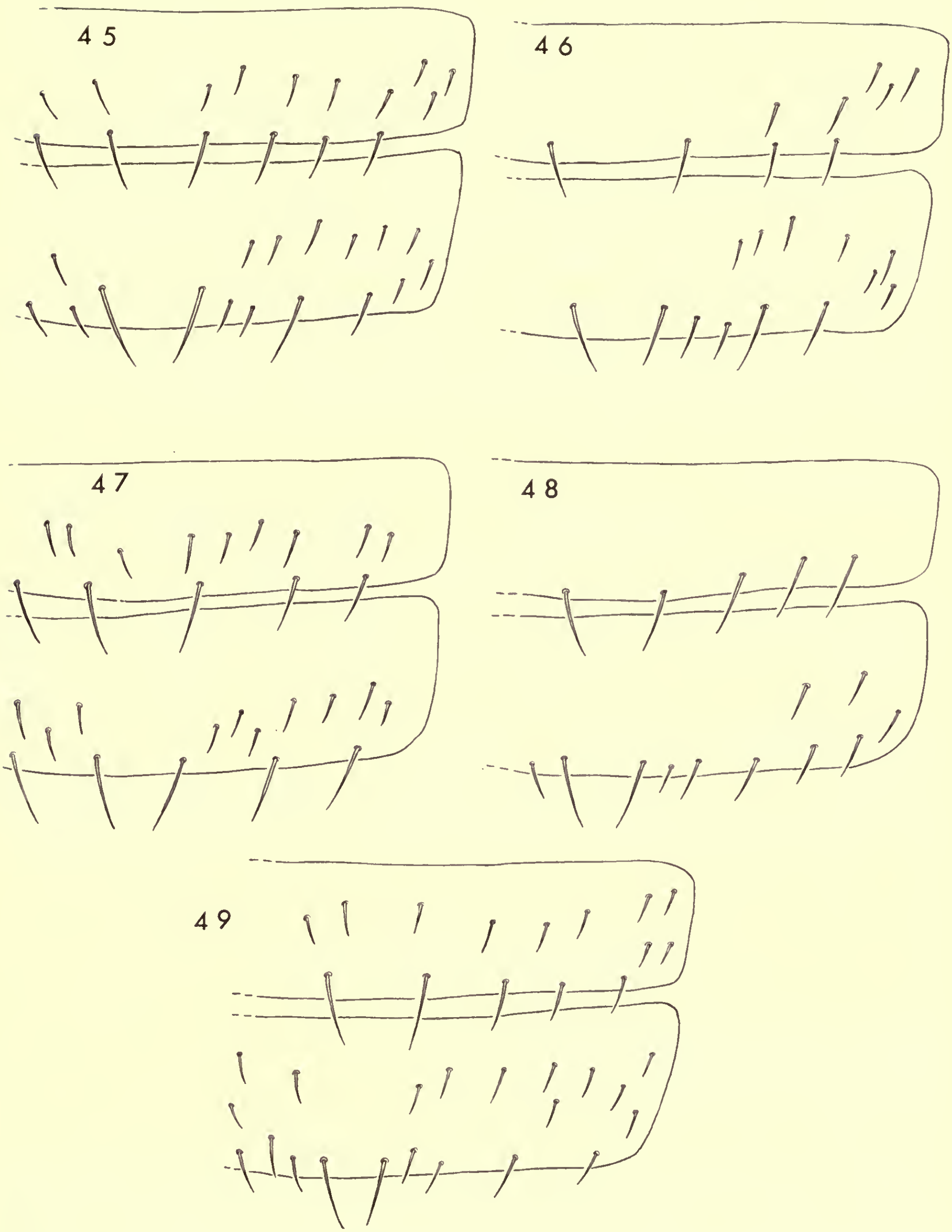
Measurements (*in* μ). Antennals I–IX : 39 ; 52 ; 117 ; 104 ; 57 ; 45 ; 34 ; 21 ; 18. Head length/breadth : 160/160. Pronotum length/breadth : 200/200. Wing length : 160. Hind tibia : 350. Tergite IX setae 1, 2 and 3 : 117 ; 130 ; 130. Tergite X setae 1 and 2 : 117 ; 130.

Material examined. Holotype ♀ (micropterous). NEW SOUTH WALES : Tunderbrine, nr. Gilgandra, *Medicago hispida* var. *denticulata*, 4.viii.1959 (*E. M. Reed*) (ANIC).

Desmothrips steeleae n. sp.

(Text-figs. 2, 15, 16, 17, 22, 24, 25, 28, 33 & 51)

Both males and females of this new species have been collected in Eastern Australia. It is easily recognized from its congeners by the exaggerated development of the vermiform sensoria on the third and fourth antennal segments. The species is named in recognition of the work of Miss H. Vevers Steele (Mrs. H. G. Andrewartha) on Australian Thysanoptera.



FIGS. 45–49. Chaetotaxy of sternites VI and VII. 45, *Desmothrips australis*. 46, *D. bagnalli*. 47, *D. mendozai*. 48, *D. obsoletus*. 49, *D. propinquus*.

♀. Length 1·7–1·8 mm. Colour dark brown (most of the specimens in the type series are teneral with pale median abdominal segments); antennal II pale distally; antennal III yellowish in basal half or two-thirds with dark brown at apex extending proximally along inner margin. Fore wing dark at base and apex, with a transverse pale area on either side of the median dark band; distal pale area irregularly parallel-sided (Text-fig. 2). Sensoria on antennals III and IV strongly vermiform, almost encircling apex and extending to basal quarter of segments; sensoria on antennals V and VI linear, about half the length of these segments (Text-fig. 22). Head a little broader than long, dorsal surface with two rows of small setae behind eyes (Text-fig. 15). Prothorax with numerous small setae (Text-fig. 16). Mesonotum with three or more pairs of accessory median setae (Text-fig. 28). Metanotum reticulate, each reticle with internal linear markings (Text-fig. 33). Abdominal tergite I almost devoid of sculpture, tergite II with some weak transverse reticulations medially (Text-fig. 17); tergites III to VIII with an anterior submarginal transverse ridge. Accessory setae on sternite VII lateral to the third pair of marginal setae (Text-fig. 51).

♂. Length 1·2–1·3 mm. Colour brown similar to female, median abdominal segments yellowish, antennal III dark in apical third. Head and thorax as in female, distal maxillary palp segment with one small apical subdivision (Text-figs. 24 & 25). Sternites III to VIII with 1 to 5 pairs of accessory setae, irregular in number and arrangement; sternite IX with 3 accessory setae in one specimen but these are absent from the other four available males.

Measurements (in μ)

	Antennal segments									Fore wing		Hind tibia	Tergite IX setae		Tergite X setae	
	I	II	III	IV	V	VI	VII	VIII	IX	L.	B.		1	2	1	2
♀ Holotype	31	52	96	78	44	31	26	13	10	1000	160	280	?	145	145	155
♀ ex Roseville	31	52	96	81	44	29	21	13	13	880	150	250	130	140	140	150
♀ ex Black Mt.	31	42	78	71	39	26	21	10	8	810	120	200	120	130	125	130
♂ ex Roseville	26	44	81	71	42	26	19	10	10	810	130	240	34	34	130	120

Material examined. Holotype ♀. NEW SOUTH WALES: Sydney, Roseville, *Pultanaea stipularis* flowers, ix.1960. (ANIC).

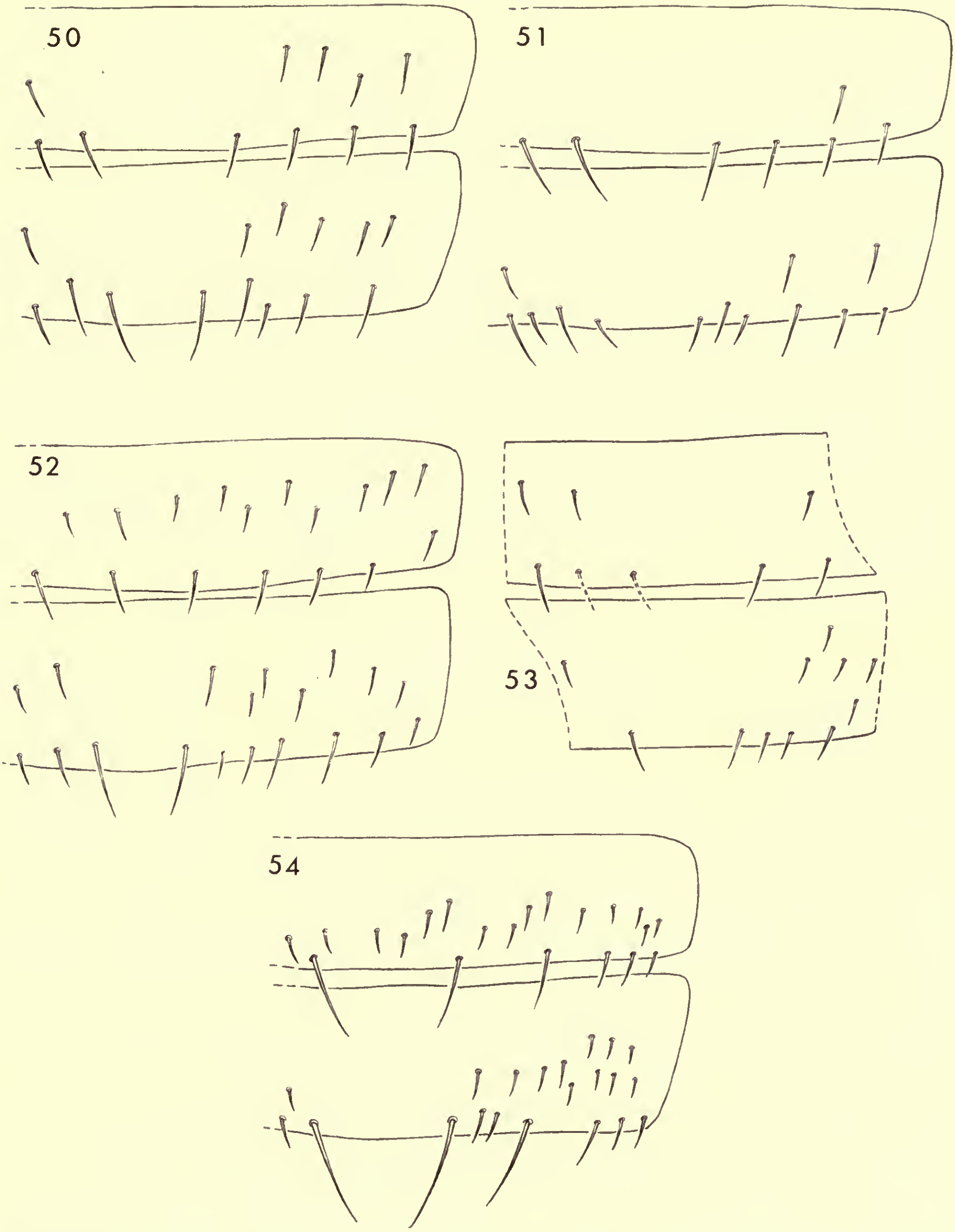
Paratypes. 6 ♀, 5 ♂, collected with holotype; Woodford, *Pultanaea ericifolia*, 3 ♀, 22.viii.1959 (*M. Casimir*) (ANIC & BMNH). AUSTRALIAN CAPITAL TERRITORY: Black Mountain, on mixed grasses, 4 ♀, 8.xi.1960 (*E. M. Reed*) (ANIC).

Desmothrips tenuicornis (Bagnall)

(Text-figs. 3, 19, 30 & 52)

Orothrips tenuicornis Bagnall, 1916 : 397–398.
Desmothrips tenuicornis (Bagnall) Bagnall & Kelly, 1928 : 205.
Desmothrips davidsoni Morison, 1931 : 449–451, **syn. n.**
Desmothrips davidsoni Morison; Steele, 1940 : 353–354.
Desmothrips sp., Steele, 1935 : 16.

In his description of *davidsoni* Morison states that this species differs from *tenuicornis* in " the proportionate length of antennal segments III–IX and in the banding of the fore wings ". Although the holotype of *tenuicornis* has the ratio of antennal segments III/IV larger than in the holotype of *davidsoni*, the variation of this ratio in the other specimens listed below suggests that this difference is not significant.



Figs. 50–54. Chaetotaxy of sternites VI and VII. 50, *Desmothrips reedi*. 51, *D. steeleae*. 52, *D. tenuicornis*. 53, *D. uniguttus*. 54, *Andrewarthaia kellyana*.

It should be noted that the type of *tenuicornis* is much larger than the type of *davidsoni*, the wings are 25% longer and the hind tibiae 30% longer. However in a direct comparison of the two specimens there appears to be little difference in the banding of the fore wings.

The unidentified species referred to by Steele (1935) as having been seen in South Australia in both brachypterous and macropterous forms is probably *D. tenuicornis*. The Steele Collection includes a single brachypterous female of this species from *Echium plantagineum*, Waite Institute, S. Australia.

♀. Colour brown, antennal III and sometimes base of IV clear yellow, extreme apex of III rarely shaded. Wings dark at base and apex, distal pale area a little broader at anterior margin than at posterior ; marginal veins pale around distal pale area of wing (Text-fig. 3). Antennal IX about two-thirds as long as VIII ; antennal segments variable in length as shown in the table below ; sensoria on III and IV rather sinuate, more than three-quarters the length of these segments ; sensoria on V and VI straight, more than half the length of these segments (Text-fig. 19). Mesonotum usually with two pairs of accessory setae close to the median setae. Metanotal sculpture very similar to *propinquus*, the internal markings of the reticles weaker than in *australis* (Text-fig. 30). Sternite VI with median pair of accessory setae just mesad of median pair of marginal setae. Sternite VII with median pair of accessory setae almost anterior to median marginal setae (Text-fig. 52).

♂. Length 1·5 mm. Colour dark brown as in female, median abdominal segments paler. Head and thorax as in female, distal maxillary palp segment with six small subdivisions. Accessory setae present on sternites III to IX, 14 in two irregular transverse rows on VIII, 3 or 4 on IX.

Measurements (*in* μ)

	Antennal segments							Fore	Hind	Ratio
	III	IV	V	VI	VII	VIII	IX	wing	tibia	III/IV
tenuicornis Type ♀	145	106	56	40	42	23	14	1000	400	1·37
davidsoni Paratype ♀	133	109	49	38	38	23	14	940	380	1·22
♀ ex Healesville	124	99	49	35	35	21	14	880	360	1·25
♀ ex Queensland	110	96	47	28	33	21	14	850	340	1·15
davidsoni Type ♀	117	94	47	35	35	21	14	810	310	1·24
brachypterous ♀	125	96	47	34	34	21	14	310	380	1·30

Material examined. Holotype ♀. VICTORIA : Healesville, *Erythraea australis*, 21.xii.1913 (*A. W. Shaw & R. Kelly*). (BMNH).

VICTORIA : Warburton, white clover, 1 ♀, 17.i.1926 (*R. Kelly*) (BMNH) ; Healesville, 1 ♀, 1926 (*R. Kelly*) (BMNH) ; Melbourne, on Daisy, 1 ♀, 17.ix.1932 (*H. V. Steele*) (HVS Coll.). SOUTH AUSTRALIA : Adelaide, lucerne & rose bushes, 3 ♀, 1 ♂ (holotype, allotype and paratypes of *davidsoni*), x.1929 (*J. Davidson*) (BMNH & WI) ; Adelaide, on roses, 7 ♀, 1932 (*J. W. Evans*) (HVS Coll. & BMNH) ; Waite Institute, *Echium plantagineum*, 1 ♀ (brachypterous), 12.x.1932 (*J. W. Evans*) (HVS Coll.) ; Waite Institute, on soil surface, 1 ♂, 18.x.1933. (WI). NEW SOUTH WALES : Wilberforce, on lucerne, 4 ♀, 12.ix.1960 (*C. R. Wallace*) ; Concord West, on mixed grasses, 2 ♀, 6.ii.1960 (*E. M. Reed*) ; Bolong, 1 ♀, iii.1962 (*E. M. Reed*) (ANIC). QUEENSLAND : Brisbane, on cotton, 1 ♀, 11.i.1926 (*E. Ballard*) (BMNH) ; Kingaroy, lucerne and cotton, 3 ♀, 15.i.1941. (UQ). HAWAII : Honolulu, ex Australia, radish leaf, 1 ♀, 1.iv.1947 (USNM).

Desmothrips uniguttus Girault

(Text-figs. 6 & 53)

Desmothrips uniguttus Girault, 1927*b* : 1.
Desmothrips uniguttatus [sic] Girault ; de Santis, 1961 : 168.

The original description of this species was as follows : " As *bagnalli* but antennal 3 white, first area wing on cephalic 1/2, wing 2 as wing 1 as to colour, narrower. Stanthorpe, forest, April 24, 1924." Although related to the other *Desmothrips* species in the reticulate metanotum and in possessing accessory setae on abdominal sternites V, VI and VII, *uniguttus* has no internal markings within the metanotal reticles and there is only one pair of setae medially on the mesonotum. The species is known only from the Holotype.

♀. Length 1·5 mm. Colour brown ; antennal III yellow, but basal third shaded brown. Distal pale area on fore wing restricted anterior to second vein, costal vein in this region pale ; proximal pale area similarly restricted anterior to second vein (Text-fig. 6). Sensoria on antennals III and IV linear, about three-quarters the length of these segments. Head with about two rows of small setae posterior to the eyes. Mesonotum with only the major pair of median setae. Metanotum reticulate, reticles without internal sculpture. Median pair of accessory setae on sternite VII far apart, anterior to third pair of marginal setae (Text-fig. 53).

Measurements (*in* μ). Fore wing length/breadth : 890/115. Hind tibia : 270. Head length/breadth : 180/180. Antennals I–IX : 34 ; 52 ; 78 ; 65 ; 39 ; 35 ; 31 ; 13 ; 13.

Material examined. Holotype ♀. QUEENSLAND : Stanthorpe, forest, 24.iv.1924 (Brisbane Museum, T.6507).

FRANKLINOTHRIPS Back

Franklinothrips Back, 1912 : 75–77. Type-species : *Aeolothrips vespiformis* D. L. Crawford, 1909, by monotypy.
Franklinothrips Back ; Stannard, 1952 : 14–23.

The species included in this genus are remarkable for their very long and slender antennae. The wings are narrow and the head somewhat reflexed into the prothorax. The anterior abdominal segments are more strongly constricted than other Aeolothripids. Only one species of this genus has been recorded from Australia, one species is known from South and East Africa and another from the Congo, and four are known from South and Central America and the Southern United States. The genus has been revised by Stannard with figures and redescriptions.

Franklinothrips variegatus Girault

Franklinothrips variegatus Girault, 1927*b* : 1.
Franklinothrips variegatus Girault ; Stannard, 1952 : 19–21.

The original description of this species was as follows : " Black ; pterothorax brown ; first 4 and ultimate abdomens white ; so antennals 2–4, 1 brown ; abdomen narrowing to base ; wing fasciate, ocula near apex ; long marginal fringes over twice length regular placed setae of veins ; antennal 3 elongate, 5–7 ½ + 4 which is shorter than 3."

The holotype is the only known specimen and Stannard has redescribed this with figures of the head and antenna.

Holotype ♀. QUEENSLAND: Brigalow-Jandowie, 17.ii.1924 (Brisbane Museum T.6522).

LAMPROTHRIPS Moulton

Lamprothrips Moulton, 1935 : 97. Type-species : *L. maculosus* Moulton, 1935, by monotypy.

Antennae nine-segmented, segments V–IX connate ; sensorium on III straight, broadly linear; sensorium on IV similar but slightly curved around apex of segment (Text-fig. 14). Dorsal surface of head with two irregular rows of setae behind eyes ; distal maxillary palp segment with one small apical division, i.e. palp three-segmented. Pronotum typically Aeolothripoid, without major setae or any interval in the row of minor posteromarginal setae. Mesonotum with one pair of median setae. Metanotal sculpture arcuate about the anterior midpoint of the sclerite (Text-fig. 37). Fore wings with or without dark bands. Abdominal sternites III–VII with accessory setae laterally but not medially ; sternal marginal setae about as long as accessory setae (Text-fig. 42).

The original description of this genus refers to a swelling on the apex of antennal III. These swellings are only present on one of the three original females and are due to the sensoria expanding when the specimens were mounted in Berlese Mountant. The genus is similar to *Arcuthrips* described above. Only two species are known, and these are both Australian.

KEY TO SPECIES

1 Fore wing with median transverse dark band, apex also shaded ; antennal III yellow, much paler than the rest of antenna which is brown . . . . . ***miltoni*** (p. 72)

– Fore wing without dark bands ; antennae almost uniformly coloured, pale brownish yellow . . . . ***maculosus*** (p. 72)

Lamprothrips maculosus Moulton

(Text-figs. 14, 37 & 42)

Lamprothrips maculosus Moulton, 1935 : 97–98.

The original description refers to a dark marking on antennal III. This is only present on one of the three original females, and apparently is an internal artifact due to the inferior preparation in Berlese Mountant. The light coloured markings on the body referred to by Moulton are not unusual in *Aeolothrips* species, particularly on the pronotum, and their significance is not understood.

Material examined. Holotype ♀. WESTERN AUSTRALIA : Perth, *Eucalyptus rudis*, 20.xii.1928. (*B. A. O'Connor*). Moulton No. 5184 (not 5084). (Cal. A. Sci.).

Lamprothrips miltoni (Girault) **comb. n.**

Desmothrips miltoni Girault, 1927*a* : 1.

The unique holotype of this species is a very badly damaged teneral female upon which very little detail can be observed. There is an extensive distal pale area on the fore wing with little more than the apical ring vein shaded. The original description was " Middle band wing over ½, distal very short, none costal ; short marginal fringe cephalad. As other species elsewise."

Measurements (*in* μ). Antennals III–IX : 96 ; 65 ; 42 ; 26 ; 32 ; 16 ; 13. Fore wing length/breadth : 1,000/130. Hind tibia : 300.

Material examined. Holotype ♀. QUEENSLAND : Flaxton, jungle, 3.vii.1923 (Brisbane Museum T.6508).

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C. F. COWAN

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BY

C. F. COWAN

Little Gaddesden House, Berkhamsted, Herts., England

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THE INDO-ORIENTAL TRIBE CHERITRINI LEPIDOPTERA : LYCAENIDAE

By C. F. COWAN

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SYNOPSIS

Like the Horagini, this small tribe comprises eight species. It has, however, been divided into four genera, three being monospecific, and musters only 29 taxa in its nomenclature. All these are discussed and four new ones are described.

INTRODUCTION

The Cheritrini comprises the genera *Cheritrella* and *Ticherra* de Nicéville, *Cheritra* Moore and *Ritra* de Nicéville, which are discussed in that sequence. It is one of three isolated tribes in oriental Lycaenidae of which the others are the Horagini (see Cowan, 1966*b*) and the much more numerous Drupadiini (formerly referred to as Marmessini, but *Marmessus* Hübner must be used for American Riodinidae, and *Drupadia* Moore stands ; see Cowan, 1966*c*).

De Nicéville's three genera are monospecific, structurally distinct, and easily separated. *Cheritra* by contrast has four or five species of diverse appearance but which scarcely overlap. To the taxa hitherto included in *Ticherra* one is here added which extends the range to Borneo and which till now had floated uneasily between several other widely different genera. Though of distinctive appearance it conforms to the general subspeciation trend of the tribe and is treated as the Bornean subspecies rather than a second species in the genus.

Compared with that of Horagini the history of the nomenclature of the tribe has been straightforward and uneventful. The aim of the present work is to emphasize its entity, to include all its taxa, and to list all the primary references. A catalogue of the specimens in the British Museum (Natural History), hereafter abbreviated to B.M. (N.H.), is given.

STATUS OF THE TRIBE

Evans (1932) and Corbet (1956) are the two modern authors cover ng the oriental Rhopalocera, the former having been brought up to date for the Lycaenidae portion, in nomenclature but not in arrangement, in the valuable contribution by Cantlie (1963).

For our tribes, Corbet is to be regarded as an advancement on the arrangement in Evans–Cantlie in that his keys will bring *Cheritrella* (though, not yet found in Malaya, it is not included) next to the other members of the tribe, instead of interposing the unrelated *Neomyrina*. This improved grouping is achieved by employing as a key character the position in the fore wing of vein 5 in preference to that of the much more mobile vein 9. The grouping thus achieved is confirmed by anatomical dissection, and " looks " equally natural.

Prior to this, comparative hind wing tail-lengths were resorted to as differential key characters. That this ultimate resource proved sufficiently reliable can hardly have been fortuitous, but its significance is not clear. The three filamentous tails at veins 1–3 of the Horagini hind wing are unique among the smooth-eyed genera, where they are paralleled only by *Semanga* which is lobed at vein 1 and tailed at veins 2–4, and they are matched among the hairy-eyed genera only in *Catapaecilma*. There are several broadly " fluffy-tailed " genera with the longest tail at vein 2 as in the Cheritrini, but they are well keyed out by Corbet to the Drupadiini (" *Marmessus* "), to the rightful exclusion of *Eooxylides* and *Thamala*.

In all these tribes and associated genera the venation of the sexes is alike, and fore wing vein 8 is always absent. In the Cheritrini vein 9 always stems from the middle of vein 7, originating well before the end of vein 10, whereas in the Horagini and nearly all the Drupadiini it is absent and vein 7 is unbranched.

The basal recurrent spur of fore wing vein 1, mentioned as occurring in most of the " Theclinae " by Corbet (1956 : 257), is present throughout this tribe, though not shown in his illustration of the *Cheritra* venation (l.c. : 347, fig. 129).

The Cheritrini is the only tribe of the three with a species known to occur in Hainan. Like the Horagini it has one species which reaches Ceylon, but like the Drupadiini it does not range south or east of Bali, Borneo (though one highly differentiated subspecies of a *Drupadia* appears in Celebes), and Mindanao.

WING-PATTERN

As the Horagini broadly conform to a tribal wing-pattern, so do the Cheritrini, but the latter are not so exclusive, having a more basic Lycaenine design found in several other tribes and individuals. The typical pattern is simple ; a plain unicolorous upperside with white tornal markings on the hind wing, and a pale underside with simple linear cell-end bars and postdiscal lines on both wings, and hind wing tornal black spots and metallic blue scaling.

In this tribe also, the species show a marked parallel subspeciation when entering the tropics and passing round them. In passing from Ceylon through India, East Pakistan and Yunnan, to the Kra Isthmus and Mergui Archipelago, the underside colour changes from pure white with faint grey lines to white with broadly orange flushed outer margins and fulvous lines. Thereafter, through Sumatra and Malaya eastwards, the underside becomes more uniformly fulvous, obscuring the markings except in the tornal half of the hind wing, where they become broader and black. This applies to *Cheritra*. *Cheritrella*, restricted to the north, is aberrant. *Ticherra* is also aberrant in the north but conforms remarkably well in Sumatra, Malaya and Borneo. *Ritra* represents an extreme development of the eastern trend of *Cheritra*.

In this tribe, unlike the Horagini and nearly half the Drupadiini, there is complete sexual dimorphism in that, whereas the female upperside is plain dark brown (in the east with a basal orange flush), that of the male is plain shining purplish, orange, or deep green. Exceptional again is *Cheritrella*, whose female upperside is marked with dull blue and white.

MALE GENITALIA

Probably because the inter-specific distinctions in India and Malaya have never been in doubt, no work seems to have been done on the genitalia of this tribe before. Only those of *C. freja* have ever been figured (Shirôzu & Saigusa, 1962 : 55). For Lycaenidae they are unusually small and squat, so small that the figures on the accompanying plates are to a scale about 40% greater than that used for the physically much smaller Horagini.

The vinculum is short, broad and deep, tapered dorsally and ventrally ; there is no saccus, the ventral end being curved out distally to seat the valvae. The twin uncal lobes are simple, lacking brachia or falces, but each with a thin tapered anterior process directed within the vinculum towards the maneca, like the root of a tooth. This uncal " radix " may serve the same purpose as a gnathos, or as a brachium, in more elongate armatures, to lead or guide the aedeagus from above. It may be actually the *peniculus* of the otherwise obsolete tegumen.

The valvae are ventrally bulbous and basally fused ; their hemispherical sacculi are united. Directed caudad from the base of the costa, or dorsal edge, of each is a prominent long horn or style ending in a recurved or inturned spike. Cephalad from the extreme base of the costa, representing the footstalk or transtilla always present in Horagini and prominent in Drupadiini, there is a tenuous connection to the anellus. The juxta, present in Horagini, is lacking in Cheritrini and Drupadiini.

The typical shape of the *Cheritra* valva is exaggerated in the larger but more attenuate *Ritra* armature, and modified in the other two genera. In *Ticherra* the dorsal horns are flattened vertically and the broad, spiked tips incurved, while the solid tapered horns of *Cheritrella* are sinuous. This last genus has a prominent apical projection on the ventral lobe. The fore and aft elongation of the *Ritra* valva results in the unusual situation that its base, and consequently the bulk of the aedeagus, lie cephalad of the vinculum. The extended, comparatively upright unci of *Cheritrella*, its elongate and upright valvae, and their distal dentation, are all interesting trends to the format of the Drupadiini.

The aedeagus in *Cheritra* is short and stout, and is strongly armoured along its dorsal and ventral surfaces, both before and after the rim (i.e. outside and inside), with long narrow rasps of minute cephalad directed dentations. These rasps may assist in retaining the aedeagus *in cop*. and, though quite different in appearance, are perhaps analogous to the *radulae* of Roepke (1938) in Nymphalidae. The rasps are reduced in extent and size in *Cheritrella*, and are replaced in the oblique-rimmed, spout-like aedeagus of *Ticherra* by lateral flaps or flanges. The long, fragile but better suspended aedeagus of *Ritra* is slightly broadened and distinctly fluted at the tip, but no serrations are visible.

The slim aedeagus of *Ritra* is firmly suspended in position by a strongly sclerotized strap-like structure which emanates rigidly from near its base and, tapering, is slung over the dorsal saddle between the valvae like the curl of a leaf-spring. This structure is only weakly developed, but still traceable, in the other genera, where it appears much nearer the apex of the aedeagus. It is presumably a modification of the anellifer, analogous to the *fulcrum* in *Everes* described by Bethune-Baker (1913 : 153, pl. 5). But it is an inversion of the *fulcrum*, which was a prop rather than a strap, being pivoted to the base rather than the dorsum of the valvae, while being of equivalent length " so as to reach up to the top edge of the clasp ", where it forked the aedeagus near the rim.

The aedeagus is primed with cornuti in all species. *Cheritrella* has a pair ; one large and pear-shaped, the other still larger and elongate, both in a voluminous vesica. The tenuous vesica of *Ritra*, like that of *Ticherra*, contains a single, minute granular cornutus, and *Cheritra* is intermediate with a single, stout, more or less curved spicule.

Over 30 genitalia preparations of Cheritrini have been made for me by Mr. Bennett. These, with further examples by Fruhstorfer, Corbet and others, have sufficed for this tribe. A total of 70 were used for Horagini, and over 100 are under study for the Drupadiini.

SEXUAL INSIGNIA

This term was introduced (Cowan, 1966*b* : 107) for the cumbersome phrase " secondary sexual characters ", but the explanation was omitted.

There are no female insignia in this or any related tribe, apart from the usual disparity in fore leg size. Both sexes have the usual integument of downy hairs about the wing bases and inner margins on the uppersides of the wings which undoubtedly provide protection for the body from damp and cold (cf. Wheeler, 1946). In the female, with the stouter body, there is rather more of this down on the hind wing than in the male. On the other hand, in the male the down, being brown, is considerably more conspicuous.

There are no male insignia in *Cheritrella* and *Ticherra*. All *Cheritra* have a small tuft of dark hairs rising from the basal portion of the radial vein of the male hind wing. Often the base of space 7 of this wing, which underlies the tuft, is bare of scales and white. Sometimes there is trace of a polished or ochreous brand on the fore wing underside, about the centre of the basal half of vein 1.

In *Ritra* males there is a large ovate discal patch of modified scales on the upperside of the fore wing and concolorous with it, centred about the origin of vein 4. This brand seems to recur in a few random species of Lycaenidae (e.g. *Arhopala atosia* Hewitson, *Hypolycaena erylus* Godart) and appears to be of different function, though it may prove analogous, to the more frequent subcostal brand near the upper end of the cell. The latter varies in size (e.g. in *Charana jalindra* Horsfield, *Strymonidia* Tutt spp., and, very small, *Neolycaena* de Nicéville spp.) and has not apparently been investigated, but must surely be associated with the antennal club. Such patches of modified scales are often referred to as androconial, but androconia proper are very different and some revision of terminology is needed here. Hereafter the various insignia referred to are called either " tufts ", " brands ", or " polished areas "

EARLY STAGES

The only traceable original account of the early stages of any species is that of Davidson, Bell & Aitken (1896 : 388, pl. 5, figs. 6, 6*a*), often requoted since.

Their descriptions of the mature larva and pupa of *C. freja* show distinct affinities with those of the still more aberrant ones of Horagini. The larva, varying from pink to green with some brown dorsal markings, has only six pointed dorsal humps, none paired. The similarly coloured pupa is fastened to a stalk rigidly at the tail, standing free. It also has rough brown dorsal protuberances.

The recorded foodplants include *Xylia dolabriformis* and other Leguminosae, and *Cinnamomum* (Lauraceae).

EXTRANEOUS TAXA

The following two taxa have from time to time been included by authors in this tribe. Both are Drupadiini.

Myrina cinesia Hewitson, 1863 : 29, pl. 13, figs. 18, 19.
Biduanda cinesoides de Nicéville, 1889*b* : 166, pl. A, fig. 7.

GEOGRAPHICAL NOTE: NORTHEAST BORNEO

It will be seen in discussing Drupadiini that northeast Borneo, particularly east and south of Kina Balu, is considered a most interesting " clinocentre " where 3 or 4 subspecies (Malayan, Bornean proper, and Philippine) of one species apparently fly together and mingle. This seems more certain as recent material is found, and needs investigation. It is not the effect of altitude, being evident at sea level. It is not seasonal, occurring at all dates. But it may well be climatic, extreme local weather variation causing different conditions either at critical phases of individual specimens' development, or on different sides of a hill, promontory, or other geographical minor feature. A similar but less pronounced situation exists round the Sumatran highlands.

This phenomenon is relevant here in perhaps accounting for the sudden proliferation of *Cheritra* species at this centre. From Ceylon eastwards to this point only one, *freja*, has been known so far. In east Borneo there flies a second, *pallida* ; and in the islands to the east occur *orpheus* and *aenea*, either of which might yet be found here.

However, the well documented view of Everett (1889) that the two island chains north and south of the Sulu Sea which link northeast Borneo and the Philippines align zoologically with Borneo rather than the Philippines was not greatly supported by the Horagini, and is not confirmed by the Cheritrini. The Philippine *orpheus* flies strongly in Palawan but not in Borneo, while *freja* and *pallida* do not occur east of Borneo. However, *Ritra aurea* has Palawan as its eastern limit.

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Mr. N. H. Bennett prepared the genitalia slides from which the figures were photographed, and his care and patience have been of great help.

Specimens have been lent to me by Col. J. N. Eliot, Mr. J. A. Hislop, M.C., Dr. T. Norman and Mr. G. C. Stubbs, to all of whom I would like to express my thanks.

Key to the Genera & Species of Cheritrini

Note. In each subhead, wing-structure is given first, then markings, and finally ♂ genitalia characteristics.

1 Fore wing truncate ; termen angled at vein 4 and excavate thence to vein 7 ; consequently the cell exceeds half fore wing length and vein 12 is shorter than cell ; nevertheless vein 9 is long, with origin before mid vein 7 and well before end of 10. Hind wing termen evenly dentate from apex to vein 2 ; dorsum deeply excavate before the pendulous lobe ; dorsal vein sinuous and short, scarcely exceeding abdomen.

No male insignia.

Upperside blue or purple in both sexes, the black terminal border expanding at the fore wing apex ; no white markings at hind wing tornus. Underside more or less uniformly mottled dark and light brown ; no black, white, or metallic blue markings at hind wing tornus.

Uncus lobes very oblique, subtriangular. Valvae distally dentate, and horns originate from mid-costa as in *Ticherra*. Aedeagus large and robust, particularly the phallobase which is quadrate ; vesica with two prominent cornuti.

CHERITRELLA (one species) ***C. truncipennis*** (p. 84)

– Fore wing termen simple, at least below vein 6 ; cell not exceeding half fore wing length ; vein 12 about = cell ; vein 9 not long, origin at or just after mid 7 and just before end 10. Hind wing termen strongly produced and castellate between vein 3 and tornus ; dorsum normal.

Male insignia present except in *Ticherra*.

Upperside sexually dimorphic ; male uniformly coloured with a uniform or linear black border, female brown or dull orange-brown ; hind wing tornus always with black and white markings. Underside (except in extreme dry-season form of *Ticherra*) ground colour simple, pale, and always with hind wing tornal black spots and metallic blue scales.

Uncus lobes nearly erect and scarcely tapered. Valvae distally simply ovate ; dorsal horns (except *Ticherra*) from base of costa. Aedeagus short and stout,or long and slim, basally tapered ; vesica with one cornutus 2

2 In India–Burma, particularly in dry season, wings produced ; fore wing apex falcate and distinctly excavate at end of vein 6 ; at and near the equator, wings more rounded and normal.

No male insignia.

Upperside, male with comparatively broad black terminal border; female very dark brown. Underside buff, dark orange, or pale ochreous according to season and race. The tails are brown, buff or white, never black.

Uncus lobes short, broadly ovate. Valvae dorsal horns rising from apex, ends flattened, tip rounded and incurved with a fine point. Aedeagus rim oblique, with two lateral flaps. Cornutus small, conical. ***TICHERRA*** (one species) ***T. acte*** (p. 85)

– Fore wing normal. Male insignia always present.

Male upperside black border linear (except in *C. pallida*). Underside markings simple. Tails white, often with black centre and shading.

Uncus lobes digitate. Valve horns solid, simple, originating from base of costa. Aedeagus rim not oblique, nor with lateral flaps 3

3 Size average. Shape orthodox; fore wing vein 9 rising just before end of vein 10.

Male hind wing upperside with sub-basal tuft; fore wing underside may be polished or branded about mid-vein 1.

Markings normal.

Male genitalia compact, sturdy. Aedeagus with long rasps on dorsal and ventral surfaces at apex. Vesica and cornutus well developed. ***CHERITRA*** (five species[1]) 4

– Large. Fore wing broad and short; costa short, apex produced, termen slightly concave, tornus rectangular. Fore wing vein 9 comparatively short, originating just after end of vein 10.

Male fore wing with ovate discal patch of modified scales. Upperside; male uniform cupreous red, female brown with basal orange suffusion. Underside abnormal; plain grey-brown, with a white band from mid-dorsum to apex of hind wing, followed by a postdiscal curved undulate black band, a white band, and a submarginal series of black lunules before the marginal markings; the black lunules bearing metallic blue scales in the tornal region. Tails more black than white.

Male genitalia all parts attenuated. Aedeagus apically slightly swollen and fluted. Vesica small; cornutus minute, pear-shaped.
RITRA (one species) ***R. aurea*** (p. 97)

4 East Borneo. Underside like the local race of *freja*. Smaller, wings rather rounded.

Male upperside dull deep purple with a cloudy light blue suffusion and 2 mm. wide black terminal borders; hind wing tornal markings and tails clear white.

Male genitalia large. Uncus lobes long and narrow. Aedeagus ventrally convex throughout its length . . . . ***C. pallida*** (p. 88)

– Male upperside shining and without broad black borders.

Uncus lobes broader, shorter. Aedeagus ventrally convex only at its base . . 5

5 Widely distributed from Ceylon to Borneo.

Male upperside dark purple brown, obscurely shot dark purple, often with a cold steely sheen. Female dark brown; the three hind wing subtornal white spots vary in size and may almost unite to form a band.

Uncus lobes broad and squat. Aedeagus ventral edge recurved . ***C. freja*** (p. 89)

– Rare and restricted. Male upperside with green or orange; female usually orange-brown, darker outwardly.

Uncus lobes longer. Aedeagus straighter 6

6 Male upperside uniform dark shining green.

Male genitalia at least as large as *pallida* and *freja* 7

– Palawan—Philippines. Small (fore wing 17–19 mm.).

Male upperside shining purple with all veins broadly shining golden orange. Female dark brown, each wing centrally rufous. Underside white, shading to orange at termen and apex; postdiscal lines broadly black below hind wing vein 4, above it faint orange or obsolete; the usual tornal markings.

---

[1] *C. freja* and *orpheus* are well known; *pallida*, *aenea* and *aenigma* are very rare, with similar undersides, and known for certain only from a few male specimens.

Male genitalia uniformly 20% smaller than any other species. Aedeagus ventrally straight . . . . **C. orpheus** (p. 96)

7 South Sumatran (unique). Large (fore wing 22 mm.). Wings fuller and rounded.

Male upperside uniform shining pure green when viewed with frontal light, heavily shot purple with back light, and cupreous in a side light; tails white narrowly centred black. Underside as *freja frigga* from Sumatra.

Male with the usual hind wing tuft, also a prominent pale ochreous subdorsal brand on the fore wing underside. Aedeagus longer and stouter than *aenea*; vesica thicker, and cornutus substantially straight . . . **C. aenigma** (p. 94)

– Philippines (Mindoro). Smaller (fore wing 20–21 mm.). Wings more angular.

Male upperside much duller and browner than *aenigma*. Female, and underside, as *orpheus*. Tails mostly black.

Male tufted but without brand.

Cornutus tip sharply curved. Valve horns much longer than in other species **C. aenea** (p. 95)

CHERITRELLA de Nicéville

Cheritrella de Nicéville, 1887 : 456. Type-species, *C. truncipennis* de Nicéville, 1887, by monotypy.

The name, derived from *Cheritra*, is of feminine gender.

The main characters are given in the key. Both sexes have a peculiar prominent rufous brown scaling on the palpi, face, abdomen (ventral), wing fringes, tails and hind wing lobe. The antennae are naked and rufous brown throughout their length on the underside.

Cheritrella truncipennis de Nicéville

(Pl. 1, fig. 1 ; Pl. 2, fig. 13 ; Pl. 3, fig. 25)

Cheritrella truncipennis de Nicéville, 1887 : 456, pl. 39, figs. 3, 4. Sikkim.
C. truncipennis de Nicéville; Elwes, 1893 : 639. Karen Hills, mid-Burma.
C. truncipennis nagana Röber, 1926 (10 Oct.) : 376. Naga Hills, Assam.
C. truncipennis de Nicéville ; Seitz, 1926 (30 Nov.) : 991, pl. 159, fig. a1.
C. truncipennis de Nicéville ; Godfrey, 1930 : 343. North Thailand.
C. truncipennis de Nicéville, syn. *nagana* Röber ; Evans, 1932 : 287, pl. 29, fig. 68.

Well figured by Seitz for the male upperside of a dry-season specimen. Also figured by most of the principal works on Indian Rhopalocera.

The species seems to be commonest on the Burma–Yunnan border near Bhamo, and not to descend far into the tropics.

The contrast between fore and hind wing ground colour on the male upperside is unusual in this subfamily, but not unique, recalling one or two species in the Arhopalini and the Pratapini.

There are no sexual insignia. The female palpi are as usual longer than those of the male. Both sexes have rather more clothing of hairs than usual on both surfaces of the subdorsal area of the hind wing. On the upperside these are densest between veins 1 and 2 in the male, but, in the female, in the cell.

There is slight variation between a dark, broad-bordered wet-season form (as in my figures) with richly coloured and boldly marked underside (f. *nagana* Röber, **stat. n.**), and the dry-season form which is paler and duller, and on the upperside has narrow borders with the hind wing blue area almost reaching the dorsum. The latter is often small.

The fore wing length varies from (16) 18–19 mm.

B.M. (N.H.). ♂ Holotype, ♀ Allotype, SIKKIM, June 1886 (*Möller*). 81 ♂, 21 ♀, SIKKIM, ASSAM, N. BURMA, YUNNAN ; 1 ♂, Victoria Point, S. BURMA (!).

TICHERRA de Nicéville

Ticherra de Nicéville, 1887 : 457. " Type *Ticherra acte* Moore."

The name, an anagram of *Cheritra*, is of feminine gender.

An interesting genus whose one species undergoes marked seasonal dimorphism north of Latitude 6°, where the wings are narrow and angular, but none in the equatorial area where the wings become increasingly rounded and normal, and the underside markings much more like those of *Cheritra*. It appears to be nearly as intolerant of the equatorial belt as *Cheritrella*, but slightly more adaptable. It would be interesting if *Cheritrella* were found in Sumatra, or more so in Borneo, to see what parallel subspeciation it showed there. It should logically much resemble the compatriot race of *Ticherra*.

The isolated *staudingeri* from Kinabalu, Borneo looks so distinct from *acte* as to warrant the view that it is a separate species, but its points of difference follow the geographical trends so well that it is included as a remote subspecies, emphasizing that it belongs to this genus.

The one species then has three named subspecies, to which is here added a fourth, and two infra-subspecific names.

The male genitalia vary geographically ; in the Indo-Burmese area they are relatively small ; they are heavier and more robust, like the insects themselves, in Malaya and Sumatra ; more so in Hainan and Borneo ; while in the last the pointed apices of the valvae are less incurved, so appearing longer, and the flaps at the tip of the aedeagus are closed.

Ticherra acte acte (Moore)

(Pl. 1, fig. 2 ; Pl. 2, fig. 14 ; Pl. 4, fig. 31)

Myrina acte Doubleday, 1847 : 21. Silhet. [*nomen nudum*].
M. acte Moore, 1857 : 47. N. India.
M. acte Moore ; Hewitson, 1863 : 30, pl. 12, figs. 8, 9.
M. symira Hewitson, 1876*b* : 152. Darjiling.
M. symira Hewitson, 1878 : Suppl. 26, pl. 3b, figs. 107, 108.
Cheritra acte (Moore) Doherty, 1886 : 127. East Kumaon.
Ticherra acte (Moore) de Nicéville, 1887 : 457, pl. 40, fig. 5 (d.s.f.).
Sithon acte (Moore) Staudinger, 1888 : 277, pl. 95, fig. (d5) (w.s.f.).
T. acte (Moore) ; de Nicéville, 1890 : 407, pl. 28, fig. 225.
T. symira (Hewitson) *idem* : 408, as ? ab.
T. acte acte (Moore) ; Fruhstorfer, 1912 : 245. Sikkim–Burma–Tongking.
T. acte acte f. *idina* Fruhstorfer, 1912 : 245. (d.s.f.).
T. acte acte (Moore) ; Seitz, 1926 : 994, pl. 146, figs. g5, 6 (d.s.f.), pl. 158, figs. h7, 8 (w.s.f. ♀).
T. acte (Moore) ; Godfrey, 1930 : 344. North Thailand.

The male upperside is very constant ; that of the female occasionally has the three spots at the hind wing tornus widened, almost forming a white band as in Seitz' illustration.

The underside varies from the intense plain orange of the wet season extreme form (*acte*) to the dull buff with pencil-grey mottling of the dry season f. *idina* Fruhstorfer. Intergrades are more frequent than extremes, and occasional dwarfs occur in both sexes of both forms (ab. *symira* Hewitson).

As with *Cheritra freja*, the upperside hind wing white tornal spots become distinctly wider in the Tavoy–Mergui area. In fact some South Burmese and Thailand examples closely approach *liviana* but they still show seasonal variation, and the *acte/liviana* cline is probably athwart the Thai–Malaya border, as a broad transitional area.

Fore wing length is (13) 18–20 mm.

B.M. (N.H.). ♀ Holotype *acte* (no loc. label).
♂ Holotype *symira* (no loc.).
♂ Holotype *idina*, SIKKIM.

235 ♂, 174 ♀; KUMAON, SIKKIM, THIBET, BHUTAN, ASSAM, BURMA to MERGUI, CAMBODIA, THAILAND.

***Ticherra acte retracta* ssp. n.**

(Pl. 1, fig. 3; Pl. 2, fig. 15; Pl. 3, fig. 26)

The latin adjective *retractus* means " revealed ", and also " remote ".

Two males and a female from interior Hainan represent this large dark subspecies, with wings less angular than in *acte* but with similar dark coloration.

The male upperside has much narrower terminal borders than any other race, and the two hind wing subtornal white spots are nearly obsolete. The female similarly has the subtornal white band much reduced, and the upperside colour is very dark brown. The tails are mostly black.

The underside is uniform dull ochreous with no markings internal to the postdiscal lines, but with prominent black and metallic green markings at the hind wing tornus.

Fore wing length is 20–21 mm.

B.M. (N.H.). ♂ Holotype; HAINAN: Interior Hainan, July, 1919 (*Bowring*).
♀ Allotype, 1 ♂; HAINAN: Mt. Wuchi, May 1903.

***Ticherra acte liviana* Fruhstorfer**

(Pl. 1, fig. 4; Pl. 2, fig. 16; Pl. 4, fig. 32)

T. acte (Moore); de Nicéville & Martin, 1896 : 479. N.E. Sumatra.
T. acte liviana Fruhstorfer, 1912 : 245. N.E. Sumatra.
T. acte (Moore); Corbet, 1940a : 6. Perlis, N.W. Malaya.
T. acte liviana Fruhstorfer; Eliot, 1959 : 382. Malaya.

Not previously illustrated.

Martin reported the species as " common throughout the year " in northeast Sumatra. Though the first record for Malaya (from the extreme north) was not made till 1940, there is a female in B.M. (N.H.) labelled " Perak, 3–4,000 ft., June 1897; *Curtis* " (i.e. Charles Curtis, cf. Corbet, 1956 : 69), and the species is now well known from cleared slopes of the Selangor–Pahang hills.

Sumatran and Malayan specimens show a similar range of variation. The forewings are much less angular than in *acte*, and the underside colour shades evenly from bright ochreous at the fore wing apex to pale cream at the hind wing tornus, while the postdiscal black lines are narrow, faint on the fore wing but bold on the hind, and the tornal markings are well developed. The male upperside is rather lighter, bluer, than in the northern races, and in both sexes, particularly the female, the tornal white spots are more prominent. The fore wing length is (16) 18–19 mm.

In all these respects this subspecies is exactly intermediate between the wet season form of *acte* and *staudingeri*.

The figure of the genitalia clearly shows the lateral lobes at the apex of the aedeagus, and the incurved flattened horns of the valvae, each with its apical spine. These features are present but less pronounced in *acte* and *retracta*, and are rather differently developed in *staudingeri*.

" Type in coll. Morton, Lausanne." Fruhstorfer (1912).

B.M. (N.H.). 3 ♂, 14 ♀, SUMATRA (N.E., & W. coast) ; 1 ♀, MALAYA.

Ticherra acte staudingeri (H. H. Druce) **comb. & stat. n.**

(Pl. 1, fig. 5 ; Pl. 2, fig. 17 ; Pl. 4, fig. 33)

Biduanda staudingeri H. H. Druce, 1895 : 615, pl. 34, figs. 5, 6. Kina Balu.
B. staudingeri H. H. Druce ; Moulton, 1912 : 164.
B. staudingeri H. H. Druce ; Swinhoe, 1912 : 190.
Eooxylides staudingeri (H. H. Druce) Seitz, 1926 : 993, pl. 156, figs. g5, g6.

The illustrations quoted are good. The fore wing length is 20–21 mm.

This isolated subspecies appears to have found a congenial habitat for survival. Though there is only negative evidence (e.g. Moulton did not see it in Sarawak), it is suggested that it is not fully montane, but that it lives at about 6,000 ft. on sheltered uplands in N.E. Borneo, not exclusively on Mount Kina Balu. Little enough collecting has been done on this mountain ; far less on the lower ones round it.

Two points about the series in B.M. (N.H.) are noteworthy ; one specimen is labelled Brunei (whose shrunken territory still contains some areas of over 6,000 ft.) ; and the great majority of specimens were collected by Waterstradt, and are labelled with the same date and in good condition, suggesting a lucky local large-scale emergence.

According to Moulton (1915 : 161), Waterstradt made three lengthy visits to Kina Balu ; about 1894, about 1899 when he visited the summit, and about 1908. He also mentions further on that a later party found at the summit " Mr. Waterstradt's bottle ", but the date of his ascent is not given. These dates, which were verbal from the natives who helped, but were carefully checked, do not reconcile with our label data by several years. Possibly these printed labels of Oberthur's refer to a date of receipt from Waterstradt, or are otherwise in error.

" The types are in his [Staudinger's] collection." Druce (1895).

B.M. (N.H.). N. E. BORNEO: 9 ♂, 13 ♀, Kina Balu, 5 Aug. 1903, *Waterstradt* (ex coll. Oberthur) ; 2 ♀, Kina Balu, *Waterstradt* (coll. Adams, ex coll. Van der Poll) ; 1 ♀, Brunei, *Waterstradt* (*idem*) ; 1 ♀, Kina Balu, 1896, (coll Oberthur, ex coll. Staudinger ;—a paratype?) ; 1 ♂, 2 ♀, Kina Balu. (? a Pryer label).

CHERITRA Moore

Cheritra Moore, 1881 : 109. " Type *C. jafra.*" (sic).

The name is probably a diminutive derived from the Greek word for a hand, referring to the palmate silhouette of the insect at rest, and is of feminine gender.

The status of at least three of the five species in the genus is conjectural. Females are similar where they fly together, but the males fall into three groups by upperside coloration ; *freja* and *pallida* are dark purple, *aenea* and *aenigma* shining green, and *orpheus* is purple half eclipsed by broad shining orange vein-striping. Never more than two species fly together. The common *freja* ranges from Ceylon through India to Borneo, flying with the unique *aenigma* in Sumatra and with the strange *pallida* in N.E. Borneo. Then the common *orpheus* ranges in the Philippines and Palawan, flying with *aenea* in Mindoro. The ♂ genitalia of all are constantly, albeit slightly, distinct, and it seems that they must be regarded as differentiated relict species derived from an ancient stem from which *freja* and *orpheus* are the most recent parallel twigs.

Further evidence that they are separate species is afforded by the shape of the rim of the aedeagus when in the continent state. In *freja* the dorsal and ventral surfaces at the apex are parallel and not swollen, the rasps folded closely back on themselves ; in *pallida* these surfaces are appreciably swollen, and in *aenea* and *aenigma* very much so ; while in *orpheus* they are thin but converge abruptly. These features were not given in the Keys, only the one *aenigma* being available for examination, one *aenea*, and three *pallida* (one more being left unmolested), but they appear constant.

Seitz, in dealing with the genus, illustrates nine specimens, but the undersides of only two Philippine ones. The boldly marked undersides in this area contrast with the uniform chalky white one with faint markings in Ceylon. Intervening subspecies have greater or less ochreous flush and prominence of the hind wing postdiscal black line.

Cheritra pallida (H. Druce)

(Pl. 1, fig. 7 ; Pl. 2, fig. 19 ; Pl. 4, figs. 34, 35)

Sithon pallida H. Druce, 1873 : 352, pl. 33, fig. 3. " Borneo ".
S. pallida H. Druce; Distant & Pryer, 1887 : 41, 268. Sandakan.
Cheritra pallida (H. Druce) H. H. Druce, 1895 : 610. Labuan (*Low*) (sic) ; Sandakan (*Pryer*).
C. pallida (H. Druce) ; Moulton, 1912 : 159. Labuan (*Low*) ; Sandakan (*Pryer*).

Ignored by Fruhstorfer and Seitz.

The specific characters and appearance are covered in the key and the illustrations. The apparent brightness of the upperside figured results from the unusual powdering of pale dull blue scales, and is quite distinct from the silky sheen of *freja* and other species. The hind wing upperside white tornal markings are much more prominent than in any male *freja* form, and they are preceded by a distinct black postdiscal band. The superficial resemblance to *Ticherra acte* is startling but irrelevant. The fore wing length is 17–19 mm.

The female is probably almost identical with *freja ochracea*, with smaller, rounder wings and perhaps blacker subtornally on the hind wing upperside. It is possible that the wing bases on the upperside may be suffused with ochreous.

The ♂ genitalia illustrated are those of a specimen from S.E. Borneo, and of the Holotype. They show different conditions of the aedeagus; the former in fully continent state, clearly showing the vesica and cornutus, and also the two long rasps, dorsal and ventral, each running outside and into the inner surface of the orifice; the latter shows the vesica and cornutus partially everted, and the rasps consequently unfurled and almost straight.

It is interesting that this rare and elusive species was caught and named so early in the generic nomenclature. The type specimen was said by H. Druce (1873 : 337) to have been in one of the collections sent from Borneo " by Mr. Lowe during the years 1867, 1869 and 1872 ". The collector in fact must have been Mr. H. (later Sir Hugh) Low, who " came out to Sarawak in 1845 as a naturalist. In 1848 he became Colonial Secretary of Labuan where he [made the first recorded ascent of Kina Balu in 1851 and] remained till 1877, when he was appointed Resident of Perak. He retired in 1884 and died April 18th. 1895." [recte 1905] (Moulton, 1915 : 141). It was after him that the well-known Satyrid *Neorina lowii* (Doubleday, 1849 : pl. 61, fig. 4) was named. It was first referred to with the data " Sarawak, from Mr. H. Low's collection " (Doubleday, 1848 : 31, as *nomen nudum*). This entry in the 1848 appendix to Doubleday's *List*, and not in Part 1 (1844) or Part 2 (1847) suggests that Low sent his whole Sarawak collection back when he moved to Labuan, and that his subsequent " Borneo " specimens all came from the northeast; in other words that *pallida* was from N.E. Borneo, not Sarawak. This view is supported by Druce junior's change of data for the Holotype from Borneo (*Lowe*) to Labuan (*Low*), and the presence of a printed Druce label " Labuan, *Low* " on the specimen. Moreover, Moulton's 1912 list of Bornean records repeats H. H. Druce's data verbatim, confirming that no Sarawak specimens were known. The specimen illustrated here is one from S.E. Borneo, an interesting addition to the range.

B.M. (N.H.). ♂ Holotype, LABUAN (*Low*); 1 ♂, 1 ♀, Tameang Lajang, S.E. BORNEO (*Wahne*); 1 ♂, S.E. Borneo; 1 ♂, S.E. Borneo (*Schönberg*); 1 ♀, Melikop (i.e. 65 miles south of Kina Balu, and 100 miles S.W. of Sandakan, near Penungah) (*Cator*).

The two female identifications are presumptive.

Cheritra freja (Fabricius)

(Pl. 1, figs. 6, 8; Pl. 2, figs. 18, 20; Pl. 3, figs. 27, 28)

The subspeciation of this well-known species has already been referred to. Its upperside is remarkably constant; in all races the tint of the male varies slightly, and in the female the hind wing white subtornal spots may widen to form a band.

The nomenclature of the nominate subspecies was investigated by Corbet (1941*b* : 105, 1956 : 65), and the repercussions on other subspecies by Cowan (1965*a* : 68–72). Unfortunately the typescript of the last paper was revised unknown to me and proofs were not circulated, resulting in the publication of several stupid misspellings and a complete additional sentence in the vital paragraph which is wrong and misleading. After explaining that two of the names in current use were incorrectly applied to certain subspecies which therefore lacked names, I proposed two new names to fill the voids, and naturally designated holotypes for them in accordance with Articles 13 (a) (ii) and 72 (c) of the Rules of Nomenclature. These new names were not " replacement names " for existing valid ones, and the case did not come under Articles 13 (a) (iii) and 72 (d) of the Rules, in a no doubt well-intentioned attempt to comply with which my script was altered. The two commas in line 6 of page 70 of the article as published, and the sentence from " and deliberately " (sic !) in line 7 to the end of line 9 should be deleted. And the dates " 1927 " in lines 12 and 15 of that page should be changed back to 1932, thus agreeing with the References (as descriptions for the new names, reference was made to the most recent widely known and accessible work on the region affected ; Evans 1932, not 1927 which was only a reprint of the 1925 articles).

For illustration of the ♂ genitalia of *C. freja*, again two examples are used. The first, from a Sumatran specimen, shows the vesica at the mouth of the aedeagus, whose rasps are partly unfurled. In Mr. Bennett's beautiful preparation for the second, a Ceylon specimen, the vesica and cornutus are seen at full ejaculation, giving the aedeagus a remarkable and completely different appearance.

Cheritra freja pseudojafra Moore

(Pl. 3, fig. 28)

Cheritra pseudojafra Moore, 1881 : 110. Ceylon.
C. jaffra Butler, 1867 syn. *pseudojafra* Moore ; de Nicéville, 1890 : 410. S. India ; Ceylon.
C. freja pseudojafra Moore ; Fruhstorfer, 1912 : 243. S. India ; Ceylon.
C. freja pseudojaffra Moore ; Evans, 1925 : 766. Ceylon.
C. freja pseudojafra Moore ; Seitz, 1926 : 993, pl. 158, fig. f6. Ceylon.
C. freja pseudojafra Moore ; Evans, 1927 : 185. Ceylon.
C. freja pseudojaffra Moore ; Evans, 1932 : 288. Ceylon.
C. freja pseudojaffra Moore ; Woodhouse, 1952 : 137, pl. 21, figs. 18, 19.

Seitz figures only the female upperside. Woodhouse gives good illustrations of both sides of each sex.

The plain white underside with very fine grey broken postdiscal lines and submarginal lunules is distinctive. The tornal metallic scales are pale blue and more extensive than in any other subspecies. The uppersides are darker in colour in both sexes than in other races.

B.M. (N.H.). 10 ♂, 15 ♀, CEYLON.

Cheritra freja butleri Cowan

Myrina jaffra Godart ; Hewitson, 1863 : 30. " Assam ". (recte *jafra* & Java).
M. jaffra Godart ; Butler, 1867 : 34. " S. India, nec Assam ".
Cheritra jaffra (Butler) de Nicéville, 1890 : 410. Ceylon, S. India.
C. freja jaffra (Butler) ; Evans, 1925 : 766 ; 1932 : 288. S. India.
C. freja joffra (Butler) ; Seitz, 1926 : 993. S. India.
C. freja butleri Cowan, 1965*a* : 70. S. India.

Indian specimens of this species were originally identified in that country as *jafra* Godart (q.v. below), of which the erroneous spelling *jaffra*, which first appeared in

1829, soon became universal. The name *freja* (Fabricius) could not be placed (Hewitson, 1865 : 53).

Then Butler recognized that *freja* and "*jaffra* Godart" were conspecific, North Indian specimens being nearer the former and South Indian ones the latter. Ignoring their type-localities, he suggested that they should be known by those respective names to avoid making "*jaffra*" a synonym of *freja*. This line was followed by Kirby (1871), who had the constant advice of Butler.

Unfortunately the old erroneous spelling *jaffra* became attributed to Butler and applied to the S. Indian race, an inadmissible procedure and one Butler had not intended. As the true locality of *Myrina jafra* Godart is Java, the S. Indian subspecies had no valid name, and *butleri* Cowan was introduced to fill the vacancy.

It is emphasized here that *jaffra*, *joffra*, *pseudojaffra*, etc. are "erroneous subsequent spellings" ; they do not rank as names or synonyms, and are not mentioned in the systematic list.

The white-banded female specimen used by Butler to illustrate his article is in the B.M. (N.H.) Type Collection.

The subspecies is similar to *pseudojafra* of Ceylon but the underside is creamier, more often with slight ochreous terminal shading. All markings are better defined, but the fore wing cell-end bar is still usually absent.

B.M. (N.H.). ♂ Holotype, ♀ Allotype, North Kanara ; 55 ♂, 57 ♀, S. INDIA.

Cheritra freja evansi Cowan

Myrina jaffra Godart; Hewitson, 1863 : 30. " Assam ". (recte *jafra* & Java).
Hesperia freja Fabricius ; Butler, 1867 : 34. " N. India ".
Cheritra freja (Fabricius) de Nicéville, 1890 : 410. N. India.
C. freja freja (Fabricius) ; Swinhoe, 1912 (March) : 207. India–Borneo.
C. freja freja (Fabricius) ; Fruhstorfer, 1912 (April) : 243. India–Siam.
C. freja freja (Fabricius) ; Evans, 1925 : 766. N. India–Burma.
C. freja freja (Fabricius) ; Seitz, 1926 : 993, pl. 146, fig. g4 ; pl. 159, fig. b7. N. India.
C. freja freja (Fabricius) ; Evans, 1932 : 288, pl. 29, No. 70. N. India, etc.
Hesperia freja Fabricius ; Corbet, 1941*b* : 105 ; 1956 : 65. Mergui nec India.
C. freja evansi Cowan, 1965*a* : 70. N. India–Tonkin, Burma, Laos.

Corbet, after careful investigation of Fabricius' type-specimens and material, found that *freja* was taken by Koenig in the Mergui Archipelago on one of his voyages from Tranquebar (S. India) and not, as Butler had assumed, in Tranquebar itself, still less in N. India whither Butler had shifted the name. Thus the widespread continental subspecies had no valid name, and *evansi* was proposed to fill the vacancy.

The subspecies is always more tawny and duller on the underside than the others ; all markings are distinct including the fore wing cell-end bar ; the fore wing markings are now ochreous not black. The tails, hitherto almost plain white, now have a distinct black centre line. There is considerable variation in size and a certain amount in appearance, reflecting the wide range in climate over the large area covered. Males often have traces of a small colourless area of polished scales about mid-vein 1 on the fore wing underside. Fore wing length is 16–22 mm., with a norm of 19–21 mm.

Seitz figures only the uppersides. The specimen figured underside by Evans is identifiable in the collection by minute blemishes as well as appearance, as one of his from Myitta, Tavoy, on the cline with the next subspecies. Its whiteness and bright marking are more typical of the latter.

There are no clear cut seasonal forms but some extreme dry season specimens have the tornal spots tawny instead of black. An isolated series of 1♂, 3 ♀ from Vietnam (S. Annam, Xom Gom; February, *Fruhstorfer*; Suoi Dai, Nha Trang, 1916, *Gaullois*) ex coll. Rothschild, are all large, and bright on the underside as in true *freja*, and may represent a coastal subspecies on the S. China Sea. Otherwise, specimens from the entire continental region appear to fall within the variation range of the one subspecies.

B.M. (N.H.). ♂ Holotype, ♀ Allotype; ASSAM: Khasi Hills; 64 ♂, 13 ♀, N. INDIA, SIKKIM & BHUTAN; 70 ♂, 21 ♀, ASSAM & MANIPUR; 47 ♂, 23 ♀, N. BURMA to TONKIN; 82 ♂, 32 ♀, continental BURMA & THAILAND, VIETNAM.

Cheritra freja freja (Fabricius)

Hesperia freja Fabricius, 1793 : 263. " Tranquebar ".
Cheritra freja regia Evans, 1925 : 766. Mergui.
C. freja freja (Fabricius); Corbet, 1941*b* : 105. Mergui nec India.
C. freja freja (Fabricius); Corbet, 1956 : 65, 347, 464. Langkawi Is.
C. freja freja (Fabricius); syn. *regia* Evans; Cowan, 1965*a* : 69.

As Evans found, the underside of this subspecies is much more vivid, a clear white with sharply contrasted orange costa and termen to the fore wing and apex to the hind wing, and with prominent orange markings, including cell-end bar, on the fore wing, which are replaced by black ones in the tornal half of the hind wing. The upperside tornal white markings in both sexes are clearer than in any other race; these quadrate spots in the females of all the preceding subspecies have been large and almost conjoined to form a white band, but hereafter the veins separating them are much more broadly black.

The males in a series from Langkawi, all taken in November or January, are shot on the upperside with a faintly greenish steely grey. This effect appears in individuals of all subspecies, and may be incidental, seasonal, or a maritime form. Langkawi specimens also show a tendency to the Malayan race in having the postdiscal black markings on the underside of the hind wing appreciably wider, comprising narrow bars rather than thick lines.

The fore wing length is 17–20 mm. (19–21 mm. in Langkawi).

The subspecies appears common, so it is not surprising that Koenig found it on his visit to Mergui.

B.M. (N.H.). 43 ♂, 26 ♀, PENINSULAR BURMA & THAILAND, Mergui Archipelago (including holotype and allotype of *regia* Evans); 6 ♂, 5 ♀, Langkawi Is.

Cheritra freja sabanga Toxopeus

C. freja sabanga Toxopeus, 1929 : 213. Pulau Weh (off N. Sumatra).

Not seen by me. Described from two specimens of each sex, it appears to lie between the Ceylon and the Mergui subspecies.

Wings very rounded. The upperside white spotting at the hind wing tornus prominent ; the female with a distinct violet tint. Underside hind wing white, fore wing creamy, termens narrowly bright ochreous ; the markings ochreous, prominent but narrow ; the metallic scaling bright and intense. Tails with a broad black centre line. (Adapted from Toxopeus). Size ?

It is interesting to note that none of the Cheritrini have ever been recorded from the well-worked Andaman and Nicobar Isles, where the Horagini are represented ; nor from Pulau Nias where both the Horagini and the Drupadiini have several species ; yet here is *C. freja* apparently flourishing on an intervening islet without either of the other tribes. Admittedly the Weh collection comprised only eleven species of Lycaenidae ; if the other tribes do occur they should be interesting.

Cheritra freja frigga[2] Fruhstorfer

(Pl. 3, fig. 27)

Cheritra freja (Fabricius) ; Distant, 1885 : 251, pl. 20, fig. 10. Malaya.
C. freja (Fabricius) ; de Nicéville & Martin, 1896 : 479. N.E. Sumatra.
C. freja frigga Fruhstorfer, 1912 : 243. N.E. (type) & W.C. Sumatra ; Malaya.
C. freja frigga Fruhstorfer ; Seitz, 1926 : 993, pl. 159, fig. b6.
C. freja frigga Fruhstorfer ; Corbet, 1956 : 347, pl. 46, fig. 193.

Seitz illustrates only the ♂ upperside, but Distant's and Corbet's figures of the underside (the latter specimen taken by me in Johore) well show the much more ochreous fore wing of the subspecies and the wider postdiscal black bars below vein 4 on the hind wing. The fore wing cell-end bar is again prominent, and the tails are more heavily black-centred. The fore wing length is 17–20 mm.

Little or nothing is known of the species from the whole of the 60,000 sq. miles of the southern third of Sumatra. There is one female specimen, very large (fore wing 24 mm.) and well marked, from Gunong Talang, Padang Bovenlanden ; ex colls. Van der Poll and Adams (a mountain exceeding 8,500 ft. which lies about 20 miles inland from Padang ; 100½° E, 1° S). This specimen might indicate a large south-western submontane race, or might conceivably pair with *aenigma* (q.v. below).

B.M. (N.H.). ♂ LECTOTYPE (selected May, 1941 by G. Talbot from Fruhstorfer's type series and here designated), " N.O. Sumatra ; *Martin* (i.e. N.E. Sumatra). 47 ♂, 33 ♀, N. SUMATRA (all north of equator) ; 1 ♀, BATU Is. (Fruhstorfer) ; 4 ♂, 2 ♀, SUMATRA: Lebong Tandai, W. coast (3° S) (*Brooks*) ; 24 ♂, 23 ♀, MALAYA and SINGAPORE.

Cheritra freja fracta ssp. n.

(Pl. 1, fig. 6 ; Pl. 2, fig. 18)

This is an interesting subspecies, intermediate between those of Sumatra, Java and Borneo.

The underside is much paler than those of *frigga* and *ochracea*, thus approaching *jafra*. But though the fore wing postdiscal lines are still present, the cell-end bar is very faint, and the hind wing markings are broad and emphatic as in *ochracea*.

The fore wing length is 19–20 mm.

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[2] Like Friday, *frigga* is named after Frigg, the wife of Odin (whence Wednesday). Third of the ancient Norse and Teutonic gods after Odin and Thor (cf. Thursday) came Frey, after whose sister *freja* is named.

B.M. (N.H.). ♂ Holotype, ♀ Allotype, 5 ♂, 14 ♀, BANKA ISLAND (*Hagen*).

Cheritra freja jafra (Godart)

Myrina jafra Godart, 1824 : 592, 593. " ♂ ", recte ♀. Java.
M. jafra Godart ; Horsfield, 1829 : 118. ♂. Java.
M. jaffra Godart ; idem : pl. 2, figs. 5, 5*a*.
M. jaffra Godart ; Boisduval, 1836 : pl. 7, fig. 4.
Cheritra freja joffra Butler ; Piepers & Snellen, 1918 : 108–9, pl. 27, fig. 174.
C. freja jafra (Godart) Cowan, 1965*a* : 68–72. Java.

Reversing the subspeciation trend, this race from Latitude 8° south is much closer to *freja* from 12° north than to the intervening equatorial *frigga*, *fracta* and *ochracea*.

Piepers & Snellen well illustrate the underside, which is as white as *freja* but whose wing margins are less bright, ochreous rather than orange, with the slender postdiscal lines and fore wing cell-end bar uniformly dark and distinct.

The fore wing length is 18–21 mm., though dwarfs to 15 mm. occur in either sex.

The authorship and date Godart, 1824 are discussed by Cowan, 1967.

B.M. (N.H.). 20 ♂, 12 ♀, JAVA (all parts) ; 1 ♂, BALI (*Doherty*).

Cheritra freja ochracea H. H. Druce

(Pl. 1, fig. 8 ; Pl. 2, fig. 20)

Cheritra freja var. *ochracea* H. H. Druce, 1895 : 610. Borneo.
C. freja (Fabricius) ; Moulton, 1912 : 158.

Not previously figured.

Druce noted the strong orange flush over the underside of both wings, and the broad hind wing postdiscal black bars. The fore wing cell-end bar is usually imperceptible against the ground colour, and the postdiscal lines are often similarly obscured. Moulton found less well emphasized examples among Sarawak specimens, and chose to disregard the subspecific name, but there is now no doubt that Bornean specimens in general conform to this distinctive type and that *freja*-like individuals are exceptional.

The subspecies varies in size, usually tending to be small, the fore wing length being (17–) 18–20 (–22) mm.

Three specimens from Pulo Laut off the south coast are small (16–17 mm.) and noticeably pale below. They are rather worn but may indicate a further peripheral subspecies.

B.M. (N.H.). 33 ♂, 19 ♀, BORNEO (west, north, east & south) ; 2 ♂, 1 ♀, PULO LAUT.

Cheritra aenigma sp. n.

(Pl. 1, fig. 12 ; Pl. 2, fig. 24 ; Pl. 4, fig. 37)

The name is from the Latin noun meaning a " puzzle ".

Male upperside uniform lustrous deep yellow-green except for the normal black and clear white hind wing tornal markings and the hairy brown dorsum ; the usual black costal and terminal lines, but the extreme base of the hind costa white ; tails very white, with thin black centre line.

The colour is brilliant *Zephyrus*-green in normal diffused light, but assumes a pinkish or violet lustre if viewed in direct sunlight.

Underside pure white, shading to bright orange in the apical half of the fore wing and at the hind wing apex ; the usual markings at the hind wing tornus ; the postdiscal line broad and black on the hind wing up to vein 4, thereafter and on the fore wing faint and fulvous ; the fore wing cell-end bar well marked, and a broad nacreous area along the dorsum bearing a prominent broad ochreous brand about the centre of vein 1. Apart from this brand the underside resembles a large and well-marked specimen of the compatriot *freja frigga*. The fore wing length is 22 mm.

The unique specimen ex coll. Oberthür bears one of his printed labels reading " Liwa, S.O. Sumatra, 1400 metres. *W. Doherty*. 1890." By S.O., Oberthür means S.W., whereas to Fruhstorfer it would mean S.E. In 1890 the energetic Doherty collected successively in Malaya, Burma and Singapore, had an unsuccessful stay in Java (Batavia, Soekaboemi and Buitenzorg), and then sailed to Kroe in S.W. Sumatra ; from here he made trips " to Miva in the mountains, Marang on the coast "—and for 3 weeks in September to the island of Engano, finally returning via Singapore, Perak, Penang, Ranawng (Renong) and S. Burma to Calcutta. Neither Liwa nor Miva are shown on available large-scale maps ; in manuscript the names are alike and I fancy they are the same ; the locality, which will be mentioned again in discussing the Drupadiini, lies in the mountain range inland from Kroe which, owing to the oblique lie and shape of the island, might equally be termed S.E., S.W., or South Sumatra. This visit of Doherty's seems to be one of the very few ever made for collecting in the southern third of the island.

Horsfield (1829 : 118), in describing the Javan male of *C. freja* for the first time, said " Wings above blackish brown *covered with a beautiful saturated cupreous gloss slightly varying to purple* . . . ". The phrase italicized by me is startling. No *freja* (or *jafra*) has a beautiful nor saturated cupreous gloss, and no such specimens are known. Horsfield had two males, which his figures show had the normal Javanese underside pattern. He surely could not have had two male *aenigma*, which might almost fit the description. The more probable explanation is that he was over-enthusiastic about the dull *purple* gloss which on occasion very slightly varies to steel-grey.

B.M. (N.H.). ♂ Holotype. S. SUMATRA: Liwa, 4,000 ft., S. Aug./Sep., 1890 (*Doherty*).

Cheritra aenea Semper **stat. n.**

(Pl. 1, fig. 11 ; Pl. 2, fig. 23 ; Pl. 4, fig. 36)

Cheritra aenea Semper, 1890 : 215. Mindoro.
C. orpheus aenea Semper ; Fruhstorfer, 1912 : 243.
C. orpheus aenea Semper ; Seitz, 1926 : 994, pl. 158, figs. g5, 6.

Male upperside similar to *aenigma* but of a yellower green, and the hind wing tornus, dorsum and tails are almost entirely black. Underside similar to *orpheus* ; white sharply shading to fulvous at the fore wing termen, with all markings obsolete except those below hind wing vein 4, which are prominent. Size as *orpheus*, smaller and with less rounded wings than *aenigma* ; fore wing length 19–21 mm.

Seitz' figures are good, though the upperside colour might be greener.

The female upperside is probably dark brown with diffuse orange discal areas on each wing, that on the fore wing large, on the hind wing small ; the usual hind wing tornal markings clearly defined.

Semper described this species from six males, after discussing 73 specimens of *orpheus* from Luzon and Mindanao. The rarity of *orpheus* in Mindoro though common in Palawan to the west and the other islands in the east, and the presence of *aenea* apparently exclusively in Mindoro, remain unexplained.

B.M. (N.H.). 2 ♂, MINDORO (1, lacking abdomen ex coll. Hewitson, labelled *orpheus* ; 1, *Everett*, Dec. 1894) ; (?) 1 ♀, Mindoro, Laguna di Nanjan, 13 Mar., 1910.

Cheritra orpheus (Felder)

There can be no mistaking the male of this species. The upperside is violet but the outer margins, and all veins except the two along the black hind wing dorsum, are rich bright orange, giving the effect illustrated at Pl. 1, fig. 12. This effect is enhanced in side lighting, when the wings may appear completely shot with pinkish, metallic orange, or metallic golden according to the angle of incidence. There is no trace of green, and the separation of this species from *aenea* is quite evident by its appearance as well as structurally.

The species is of particular interest in that the orange veining indicates, in addition to all extant veins, those now obsolete in all Rhopalocera ; the anterior extension of hind wing vein 4 through the cell to the base ; similar extensions of fore wing veins 4 and 5, which merge about mid-cell to run concurrent to the base ; and the obsolete subdorsal vein from fore wing base to termen between veins 1 and 2. This phenomenon, materializing the phantom neuration of the complete Median and Second Cubitus, is closely but less completely paralleled in *Drina maneia* (Hewitson) (cf. Corbet, 1956 : 336), another individualistic species of a distinct tribe of " Theclinae ", and the only species of the subfamily known to carry true androconia (Corbet, 1956 : 306). No androconia can be detected in *orpheus*.

Subspeciation, again, is evinced mainly on the underside.

One female specimen from Luzon bears the small round Felder label " Jalajala ". It happens that the next species described by the Felders after *orpheus* was *Myrina jalajala* (a species in the Pratapini). The locality has been traced on an old map to a small promontory on the north shore of Lake Bai near Manila, which on modern maps is shown as Halahala, Talatala, or a variant.

Cheritra orpheus eurydice Fruhstorfer

(Pl. 4, fig. 39)

C. orpheus eurydice Fruhstorfer, 1912 : 243. Palawan.
C. orpheus eurydice Fruhstorfer ; Seitz, 1926 : 994, pl. 158, figs. g3, 4.

The male upperside orange shading is very vivid. The female is dark brown with the usual hind wing tornal markings, and with a broad dull orange-brown suffusion over the central half of the fore wing and spaces 2 to 4 of the hind wing.

The underside is whitish, bordered along the fore wing termen and at the hind wing apex with bright orange ; the postdiscal markings in the tornal half of the hind wing are comparatively narrow and irregular.

B.M. (N.H.). 7 ♂, 10 ♀, PALAWAN.

Cheritra orpheus orpheus (C. & R. Felder)

(Pl. 4, fig. 38)

Myrina orpheus Boisduval *in litt.* C. & R. Felder, 1862 : 292. Luzon.
M. orpheus Felder syn. *massiva* Hewitson ; Hewitson, 1863 : 30, pl. 12, figs. 10, 11 ; pl. 16, fig. 45.
Cheritra orpheus orpheus (Felder) Fruhstorfer, 1912 : 243.
C. orpheus orpheus (Felder) ; Seitz, 1926 : 994, pl. 146, fig. h8.

Hewitson's name *massiva*, already engraved on his plate, was a stillborn synonym, as he explained in his text.

A rather variable subspecies, but generally the male upperside is more yellowish orange, rendering the purple patches more apparent ; the female orange-brown areas are very variable in extent but usually the wing bases are darker. The underside of the fore wing is usually more suffused with orange, and the postdiscal black bars in the tornal half of the hind wing are slightly more heavily marked than in *eurydice*.

B.M. (N.H.). ♂ Holotype, ♀ Allotype, 13 ♂, 9 ♀, LUZON ; 3 ♂, 1 ♀, MINDORO ; 1 ♀, TICAO.

Cheritra orpheus orphnine ssp. n.

(Pl. 1, fig. 9 ; Pl. 2, fig. 21)

The name is from the Greek adjective meaning " dusky ", comprising red, white and black pigments.

In Mindanao a much more distinct race has evolved. The male upperside is bright like *eurydice*, but the female is normally uniform plain dark brown. The underside, particularly in the female, is much more suffused with orange, and the hind wing black postdiscal markings are broader and more regular.

The fore wing lengths of all subspecies vary from 17–19 mm.

B.M. (N.H.). ♂ Holotype, ♀ Allotype, MINDANAO, 1903–4 (*Waterstradt*) ; 12 ♂, 3 ♀, Mindanao.

RITRA de Nicéville

(Pl. 1, fig. 10 ; Pl. 2, fig. 22 ; Pl. 3, figs. 29, 30)

Ritra de Nicéville, 1890 : 399, 411. Type-species, *Sithon aurea* Druce.

An euphonic derivative of *Cheritra*, *Ritra* is of feminine gender.

The characteristics of this genus and species have already been discussed. Fruhstorfer described three subspecies as distinct from the nominal one. The senior, *volumnia*, is sound, but it is with some hesitancy that *cuprea* is retained separately, and likewise that *panowa* is upheld apart from *aurea*.

Fruhstorfer's collection passed to the B.M. (N.H.), but his unique female type of *panowa* is not there, nor is one female from his type-series of *cuprea*, nor his single Perak *volumnia* male. It is noticed that each of these was illustrated by Seitz, and it would seem that the originals for all Seitz' illustrations were kept separately.

The hind wing postdiscal black band follows parallel geographical subspeciation to that of *Cheritra*. In Sumatra and Malaya it is relatively narrow and disjointed ; in Borneo broad and solid.

It is interesting that *R. aurea* is found in Palawan but not further east. It thus overlaps *C. orpheus*, which there reaches its western limit.

Ritra aurea cuprea (Fruhstorfer) **comb. n.**

Ritra aurea (H. Druce) ; de Nicéville & Martin, 1896 (1 Feb.) : 479. N.E. Sumatra.
R. aurea (H. Druce) ; de Nicéville, 1896 (24 Mar.) : 185, pl. T, fig. 45. ♀. N.E. Sumatra.
Cheritra aurea cuprea Fruhstorfer, 1914 : 175. N.E. Sumatra.
C. aurea cuprea Fruhstorfer ; Seitz, 1926 : 994.

Fruhstorfer described this race from 5 ♂, 1 ♀, as being considerably smaller than any other, the male having smaller tornal white spots on the hind wing upperside than *volumnia*, and the female clearer white ones than *aurea*. He said the underside was blackish grey instead of brownish as in those two subspecies.

I find the size range the same, and the appearance almost identical with *volumnia*. Fore wing length 20–24 mm.

The name should be retained for the Sumatran subspecies pending the collection of more material from that island.

B.M. (N.H.). ♂ Holotype, ♀ Allotype, 3 ♂ Paratypes, N.E. SUMATRA (*Martin*), ex coll. Fruhstorfer ; 4 ♂, 3 ♀, N.E., E. & W. coasts of Sumatra.

Ritra aurea volumnia (Fruhstorfer)

Ritra aurea (H. Druce) de Nicéville, 1890 : 411. Perak & Borneo.
Cheritra aurea volumnia Fruhstorfer, 1912 : 243. Perak (Type loc.) & Sumatra.
C. aurea volumnia Fruhstorfer ; Seitz, 1926 : 994, pl. 158, fig. g1.
R. aurea volumnia (Fruhstorfer) Corbet, 1956 : 347. Malaya.

Seitz' illustration of the male upperside is good.

Fruhstorfer's description from one Perak male and some Sumatran specimens starts with the phrase " almost double the size of *aurea* from Borneo ". He must have had an extreme dwarf of the latter. He then gave two features ; the upperside of all wings was somewhat darker and more strongly metallic (in the male) ; and the black postdiscal band on the underside of the hind wing was much narrower than in Borneo. Both these points are equally valid for Sumatran and Malayan specimens as compared to the majority of Bornean ones. The males furthermore tend to be slightly more purple-shot in certain lights. The fore wing length is 20–24 mm.

Corbet (1956 : 347) said that he had seen one Malayan male specimen without the fore wing brand. He gave no data, and it has not been possible to trace it. The size of the brand varies appreciably, but no examples have been seen where it even approaches obsolescence.

B.M. (N.H.). 3 ♂, 1 ♀, MALAYA.

Ritra aurea panowa (Fruhstorfer) **comb. n.**

Cheritra aurea panowa Fruhstorfer, 1914 : 175. W. Borneo, Sintang.
C. aurea panowa Fruhstorfer ; Seitz, 1926 : 994, pl. 158, fig. g2.

Described from one ♀, as differing from *aurea* in the white subtornal band on the hind wing being darkened and formed of smaller neat grey components ; in the considerably darker, blackish rather than brownish, underside (which Seitz amends to " uniform dark yellowish grey, not brown "), on which the hind wing median and subtornal white bands are narrower, and the black spots being less dusted with blue.

Seitz' illustration shows the underside postdiscal black band to be unusually wide, thus reducing the width of the two white ones referred to by Fruhstorfer. But one can hardly agree with his repeated reference to the underside of *aurea* as brown ; it is grey in all subspecies. Females often have slight terminal fulvous suffusion at the fore wing termen, and when males are viewed against the light a slight orange flush is apparent by transparency.

Ritra aurea aurea (H. Druce)

(Pl. 1, fig. 10 ; Pl. 2, fig. 22)

Sithon aurea H. Druce, 1873 : 352, pl. 33, fig. 1. ♂. Borneo.
Ritra aurea (H. Druce) ; H. H. Druce, 1895 : 610. ♀.
R. aurea (H. Druce) ; Moulton, 1912 : 159. Sarawak & N. Borneo.
Cheritra aurea aurea (H. Druce) ; Seitz, 1926 : 994, pl. 158, fig. f7.

The original male was faithfully described and figured upperside, but the colour below was called " sooty brown " instead of mid-grey. This may have misled Fruhstorfer.

The male specimen here illustrated is typically marked but the fore wing upperside patches of modified scales cover rather smaller than average areas. These patches are often large and dark, but the dark appearance is probably due to age and wear.

The female is often described as coppery above. This is misleading, as it is in no way metallic. It is dull orange-brown with dark brown borders round each wing. Seitz gives a good illustration of a female with rather narrow borders.

The fore wing length is 21–25 mm., but throughout Borneo individuals as small as 17 mm. are not infrequent. Palawan specimens also are rather small.

Moulton says the female is rather the commoner. That this is not so in collections is probably due, in the case of *freja* and others as well as *aurea*, to the greater beauty, and freshness, of the male, and the selectiveness of the collector. In a total of about 4 years in Malaya I caught but one *aurea*, a female, and certainly found the female *freja* the more frequent.

This species was another of those first found by Sir Hugh Low.

B.M. (N.H.). ♂ Holotype, 31 ♂, 15 ♀, SARAWAK, BRUNEI, SABAH ; 1 ♂, Tameang Lajang, S.E. BORNEO ; 2 ♂, 1 ♀, PALAWAN.

SYSTEMATIC LIST OF THE CHERITRINI

CHERITRELLA de Nicéville, 1887	
C. truncipennis de Nicéville, 1887	Sikkim–Yunnan, continenta Burma & Thailand.
f. *nagana* Röber, 1926 (wet season f.)	
TICHERRA de Nicéville, 1887	
T. acte acte (Moore, 1857)	N. India & Thibet–Burma & Thailand.
f. *idina* Fruhstorfer, 1912 (dry season f.)	
ab. *symira* (Hewitson, 1876) (dwarf)	
retracta ssp. n.	Hainan.
liviana Fruhstorfer, 1912	Sumatra ; Malaya.
staudingeri (H. H. Druce, 1895)	N.E. Borneo.
CHERITRA Moore, 1881	
C. pallida (H. Druce, 1873)	N.E. & S.E. Borneo.
C. freja pseudojafra Moore, 1881	Ceylon.
butleri Cowan, 1965	S. India.
evansi Cowan, 1965	N. India–Tonkin, Burma, Thailand & Viet Nam.
freja (Fabricius, 1793)	Mergui, Peninsular Burma & Thailand.
syn. *regia* Evans, 1925	
sabanga Toxopeus, 1929	Weh Is. (N. Sumatra).
frigga Fruhstorfer, 1912	Sumatra ; Malaya.
fracta ssp. n.	Banka Is.
jafra (Godart, 1824)	Java ; Bali.
ochracea H. H. Druce, 1895	Borneo ; Po. Laut.
C. aenigma sp. n.	S.W. Sumatra.
C. aenea Semper, 1890	Mindoro.
C. orpheus eurydice Fruhstorfer, 1912	Palawan.
orpheus (C. & R. Felder, 1862)	Luzon ; Mindoro ; Ticao.
syn. *massiva* (Hewitson, 1863)	
orphnine ssp. n.	Mindanao.
RITRA de Nicéville, 1890	
R. aurea cuprea (Fruhstorfer, 1914)	Sumatra.
volumnia (Fruhstorfer, 1912)	Malaya.
panowa (Fruhstorfer, 1914)	W. Borneo.
aurea (H. Druce, 1873)	Borneo ; Palawan.

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PLATE 1

Uppersides of ♂ specimens of Cheritrini.

The Holotypes of the four new taxa are in the right column.

Fig. 1. *Cheritrella truncipennis* de Nicéville. Sadon, N.E. Burma, 8 Nov. 1927 (*Tytler*).
Fig. 2. *Ticherra acte acte* (Moore) f. *idina* Fruhstorfer (d.s.f.). Sikkim, 1886 (*Möller*).
*Fig. 3. *T. acte retracta* ssp. n. Holotype. Interior Hainan, July 1919 (*Bowring*).
*Fig. 4. *T. acte liviana* Fruhstorfer. N.E. Sumatra, Dec. 1892 (*Martin*).
Fig. 5. *T. acte staudingeri* (H. H. Druce). Kina Balu, Aug. 1903 (*Waterstradt*).
*Fig. 6. *Cheritra freja fracta* ssp. n. Holotype. Banka (*Hagen*).
Fig. 7. *C. pallida* (H. Druce). S.E. Borneo (*Schoenberg*).
*Fig. 8. *C. freja ochracea* H. H. Druce. Mengkuago, N.E. Borneo, 19 Apr. 1891 [*Pryer*].
*Fig. 9. *C. orpheus orphnine* ssp. n. Holotype. Mindanao, 1903–4 (*Waterstradt*).
Fig. 10. *Ritra aurea aurea* (H. Druce). Kina Balu (ex coll. Druce).
Fig. 11. *Cheritra aenea* Semper. Mindoro (ex coll. Hewitson).
*Fig. 12. *C. aenigma* sp. n. Holotype. Liwa, S.W. Sumatra, Aug.–Sep. 1890 (*Doherty*).

Colour note: Figs 1–8 are shades of purple; 9, purple veined orange; 10, bright orange; 11, 12 green.

Photographic note: To distinguish the dark borders from the dark ground, figs 1–5, 7, 8 were photographed in blue light.

* Not previously illustrated.

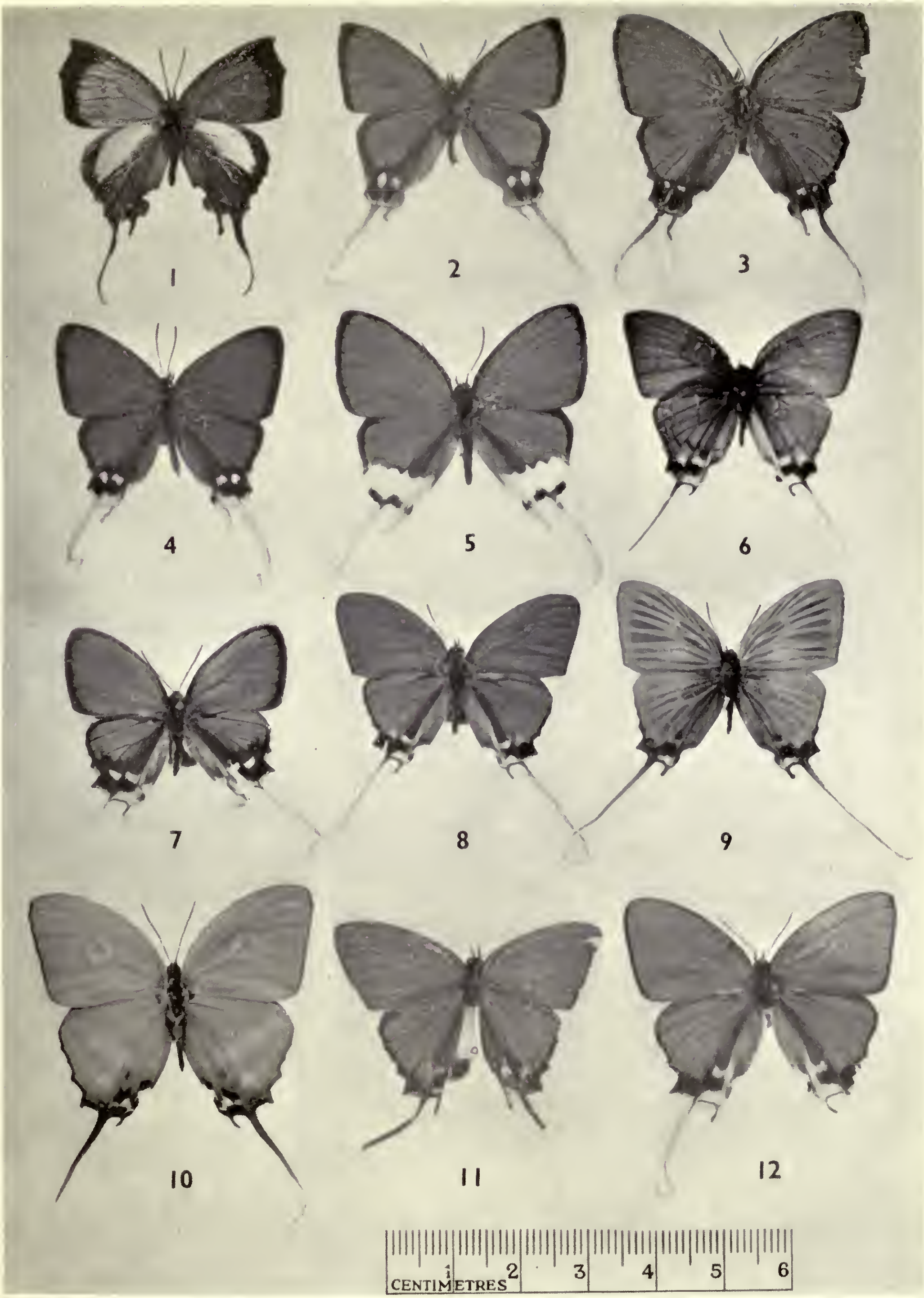
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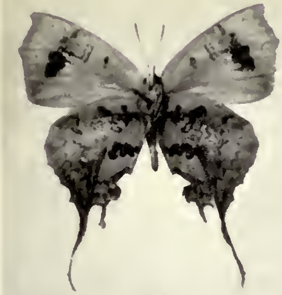
PLATE 2

Undersides of ♂ specimens of Cheritrini.

(same specimens as on Plate 1)

Fig. 13. *Cheritrella truncipennis* de Nicéville.
Fig. 14. *Ticherra acte acte* (Moore) f. *idina* Fruhstorfer (d.s.f.).
*Fig. 15. *T. acte retracta* ssp. n. Holotype.
*Fig. 16. *T. acte liviana* Fruhstorfer.
Fig. 17. *T. acte staudingeri* (H. H. Druce).
*Fig. 18. *Cheritra freja fracta* ssp. n. Holotype.
Fig. 19. *C. pallida* (H. Druce).
*Fig. 20. *C. freja ochracea* H. H. Druce.
*Fig. 21. *C. orpheus orphnine* ssp. n. Holotype.
Fig. 22. *Ritra aurea aurea* (H. Druce).
Fig. 23. *Cheritra aenea* Semper.
*Fig. 24. *C. aenigma* sp. n. Holotype.

* Not previously illustrated.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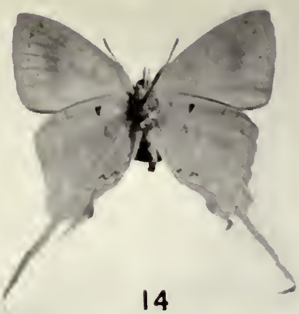
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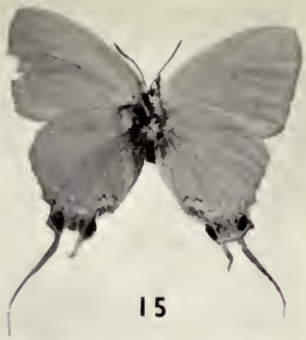
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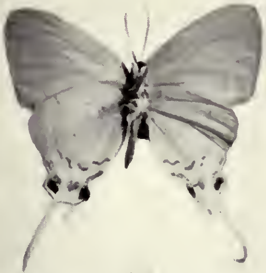
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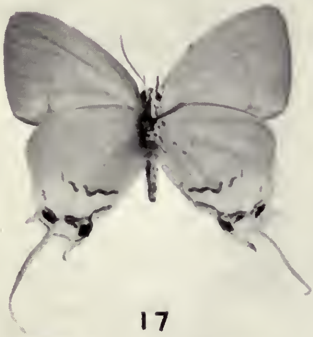
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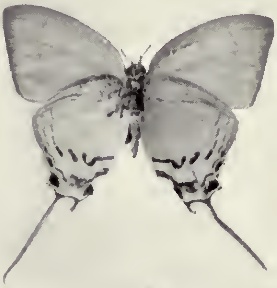
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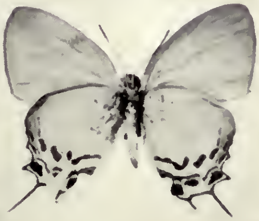
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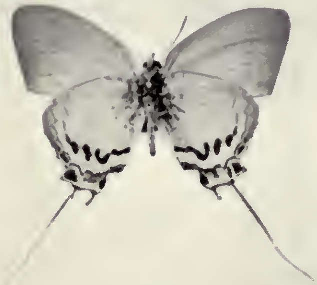
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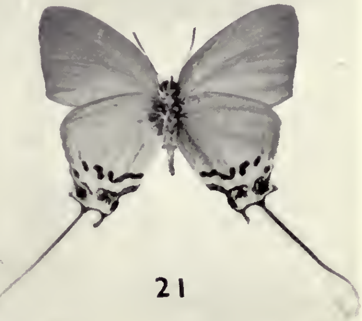
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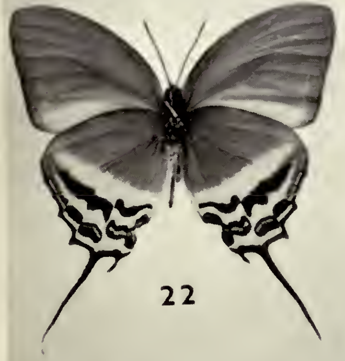
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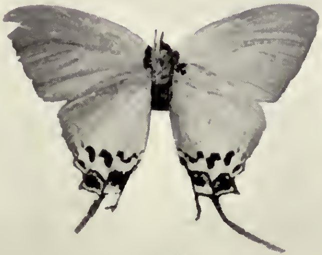
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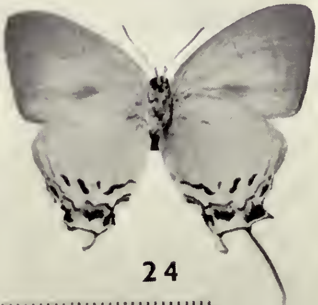
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PLATE 3

♂ genitalia of representative Cheritrini.

Lateral aspect from the left of, except fig. 30, the complete parts.

Fig. 25. *Cheritrella truncipennis* de Nicéville. Gen. Prep. NHB. 1965/2530. Note large quadrate phallobase of aedeagus, large curved cornutus (the smaller being in the partially everted vesica), the long oblique unci, and the elongate, upright, dentate valvae.

Specimen : Darjiling ; 28 May 1898 (*Bingham*).

Fig. 26. *Ticherra acte retracta* ssp. n. Holotype. Gen. Prep. NHB. 1955/1471. Note evenly tapered aedeagus, here seen with the vesica and minute cornutus fully everted and deflected from the uncus ; and the incurved pointed tips (like envelope flaps) of the flattened horns of the valvae.

Specimen : as Pls. 1, 2 ; figs. 3, 15.

Fig. 27. *Cheritra freja frigga* Fruhstorfer. Gen. Prep. NHB. 1955/1447. Compact, with a dense vesica and large cornutus. Note strong " rasps " on dorsal and ventral surfaces of rim of aedeagus.

Specimen : Sumatra (*Buxton*).

Fig. 28. *C. freja pseudojafra* Moore. Gen. Prep. NHB. 1965/2532. Same species as fig. 27, but here seen with vesica and cornutus fully everted and at extreme stretch.

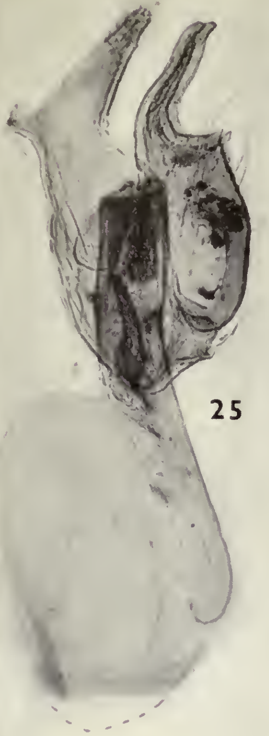
Specimen : Ceylon, 1892 (*Doncaster*).

Fig. 29. *Ritra aurea cuprea* (Fruhstorfer). Gen. Prep. NHB. 1955/1436. This and fig. 25 above represent the extremes of the Cheritrini pattern.

Specimen : Holotype, N.E. Sumatra (*Martin*).

Fig. 30. *R. aurea aurea* (H. Druce). Gen. Prep. NHB. 1955/1437. An " exploded " preparation showing (a) the usual Cheritrine vinculum and uncus ; (b) aedeagus ; note suspensory process, small vesica and minute cornutus near the swollen apex ; (c) the right valva.

Specimen : Holotype, Borneo (*Low*).



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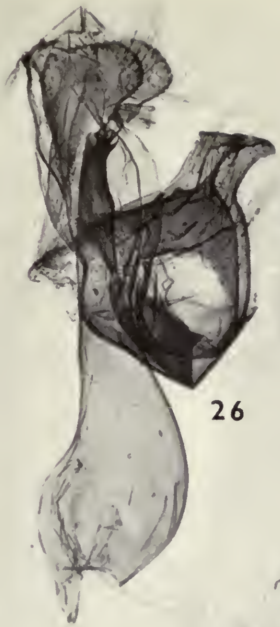

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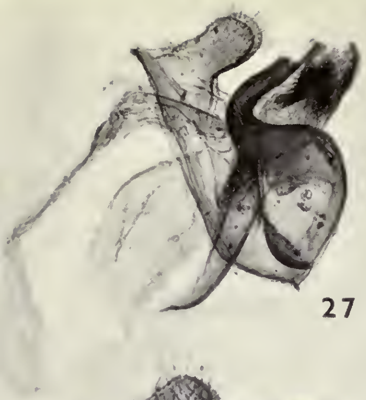

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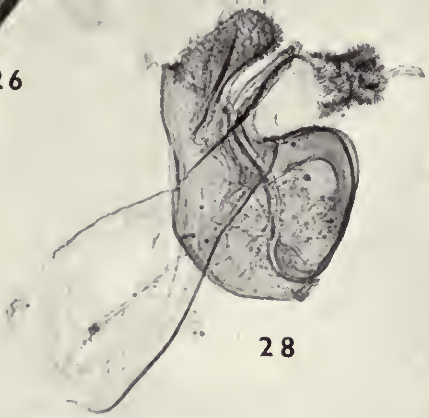

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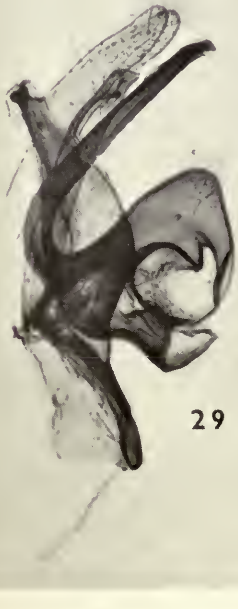

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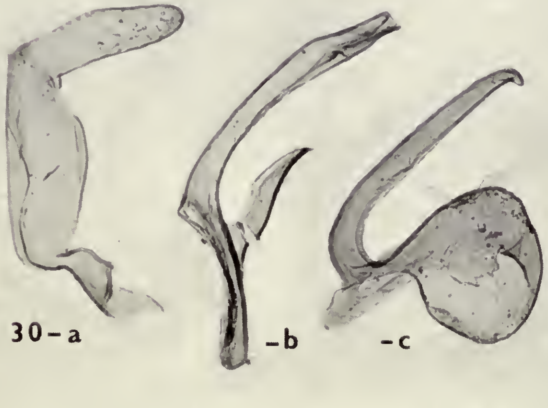

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PLATE 4

♂ genitalia of *Ticherra* and species of *Cheritra*

(complete, lateral aspect from left).

FIG. 31. *T. acte acte* (Moore) f. *idina* Fruhstorfer. Gen. Prep. NHB. 1955/1445.

Specimen : Mergui, Jan. 1926 (*Evans*).

FIG. 32. *T. acte liviana* Fruhstorfer. Gen. Prep. NHB. 1955/1472. The tips of the valvae of this subspecies are differently recurved. The aedeagus is here shown slightly rotated about its axis, displaying its lateral apical lobes.

Specimen : N.E. Sumatra (*Martin*).

FIG. 33. *T. acte staudingeri* (H. H. Druce). Gen. Prep. NHB. 1955/1446. A still further evolved subspecies.

Specimen : Kina Balu.

FIG. 34. *C. pallida* (H. Druce). Gen. Prep. NHB. 1955/1552. The cornutus is fully withdrawn to base of aedeagus.

Specimen : S. E. Borneo [*Pryer*].

FIG. 35. *C. pallida* (H. Druce). Gen. Prep. NHB. 1955/1453. The vesica and cornutus are everted, causing a restriction at rim of aedeagus ; the dorsal rasp is fully unfurled.

Specimen : Holotype, [N.E.] Borneo (*Low*).

FIG. 36. *C. aenea* Semper. Gen. Prep. NHB. 1955/1441. Short, thick-lipped aedeagus ; comparatively large vinculum, uncus, and valvae.

Specimen : Mindoro, Dec. 1894 (*Everett*).

FIG. 37. *C. aenigma* sp. n. Gen. Prep. NHB. 1955/1442. Very similar to *aenea*, but differences in valvae and aedeagus.

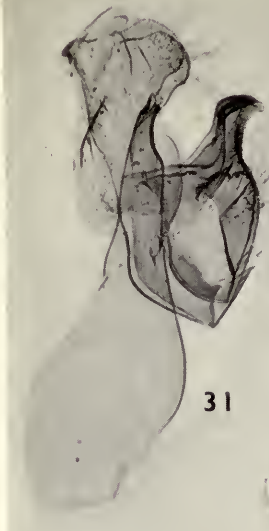
Specimen : Holotype, Liwa, S.W. Sumatra, Aug.–Sep. 1890 (*Doherty*).

FIG. 38. *C. orpheus orpheus* (C. & R. Felder). Gen. Prep. NHB. 1955/1440. Genitalia less aedeagus. Constantly small, and ;—

Specimen : Luzon (*Fruhstorfer*).

FIG. 39. *C. orpheus eurydice* Fruhstorfer. Gen. Prep. NHB. 1955/1473. —the lips of the aedeagus are always compressed.

Specimen : Palawan.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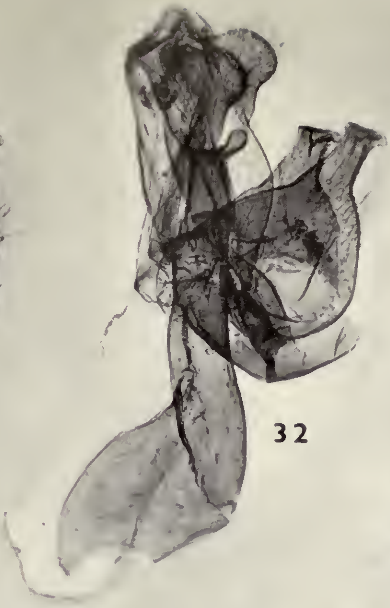
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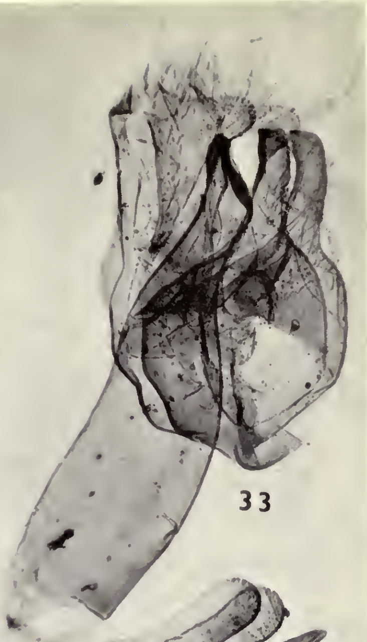
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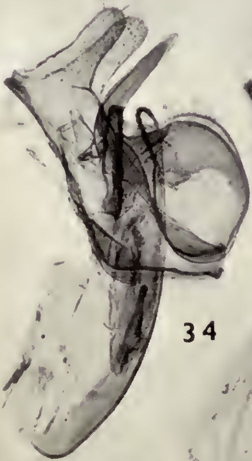
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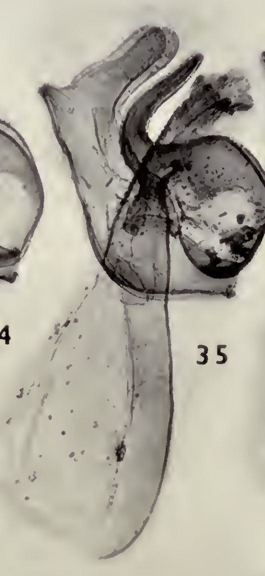
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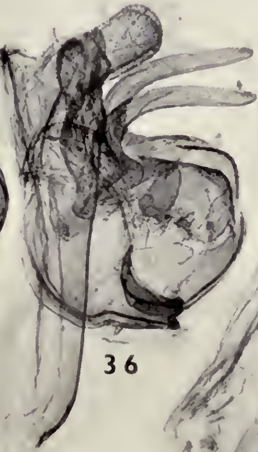
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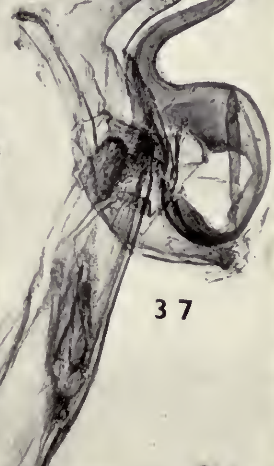
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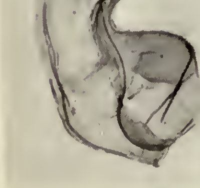
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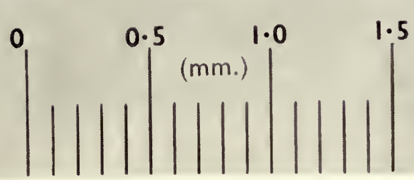

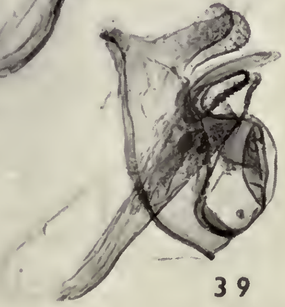
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ENTOMOLOGY Vol. 20 No. 4
LONDON: 1967

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BY

D. M. ACKLAND

Hope Department of Entomology, University Museum, Oxford

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DIPTERA FROM NEPAL

ANTHOMYIIDAE

By D. M. ACKLAND

SYNOPSIS

The Anthomyiidae collected on the 1954 and 1961–62 British Museum (N.H.) Expeditions, by Mr. J. B. Tyson in 1953, and by Prof. H. Janetschek in 1961 are systematically treated. Eleven new species are described, including one new species from Tadzhikistan, one new combination is created, and the relationship between them is discussed.

INTRODUCTION

This paper is based on material collected on four expeditions to Nepal: by Mr. R. L. Coe, entomologist on the 1961–62 British Museum (Natural History) Expedition to Eastern Nepal; Mr. J. Quinlan on the 1954 Expedition; Mr. J. B. Tyson in 1953; and Prof. H. Janetschek in 1961, this latter material being in the Deutsches Entomologisches Institut, Berlin. One new species from Tadzhikistan is also described in this paper.

My thanks are due to the following, who have generously given me advice and help, and loaned material: Prof. W. Hennig of the Staatliches Museum für Naturkunde, Stuttgart; Dr. P. Freeman, Mr. R. L. Coe and Mr. A. C. Pont of the British Museum (Natural History), London; Dr. G. Morge of the Deutsches Entomologisches Institut, Berlin; and Mr. H. Andersson of the Zoological Institute, Lund.

The Anthomyiidae have in the past generally been considered as a subfamily within the Muscidae. They are here treated as a separate family, in line with the work of Huckett (1965*b*) and Hennig (1966). No attempt is made to divide the Anthomyiidae into subfamilies. Previously accepted sub-groupings (i.e. Fucelliinae to include *Myopina* Robineau-Desvoidy, 1830) have been shown (Herting, 1957: 434; Hennig, 1966: 25) to be heterogeneous.

On the other hand, most of the generic and subgeneric groupings of recent European and American authors have been accepted as genera. The exact status of these supra-specific groups is still in dispute. For the correct assignment of species to genera, an examination of the male genitalia is essential. The common possession of a non-genitalic character (e.g. an anteroventral seta on the mid tibia) within a limited fauna, in a group of species which on other grounds is clearly monophyletic, has often led to that character being accepted as a "generic" character; the absence of it in a species from a different fauna (which on other grounds is clearly related) has sometimes delayed the recognition of their close relationship. As examples of characters which have often in the past been considered as of generic value, but which can be shown to be either present or absent in undoubted closely related species, the following can be mentioned: a projecting epistome, an anteroventral seta on the mid tibia, the costa with hairs on the ventral surface, an apical posteroventral seta on hind tibia, and hairy eyes.

The generic key given in this paper is therefore designed mainly to deal with the species included in the paper, and will not necessarily work with material from another area. Where the characters specifically apply to species which are the only known representative of the genus in Nepal, I have keyed out to the species.

The following measurements are used: the width of the parafacials is measured at about the level of the middle of the third antennal segment, and is the real width, with the angle of vision at right angles to the plane of the parafacial, not the apparent width with the head viewed in profile; the width of the third antennal segment is the greatest width; the lengths of the second and third antennal segments are measured with the head viewed from in front; the width of the gena is the narrowest width.

The following characters are considered to be present normally in the Anthomyiidae, if not stated to be otherwise: two presutural and three postsutural pairs of dorsocentral setae, propleural depression, prosternum, pteropleuron and hypopleuron completely bare, sixth abdominal tergite hidden and without setae, anal vein reaching wing margin, even if only faintly.

No species of Anthomyiidae appear to have been recorded from Nepal. In the present paper eleven new species are described, and five previously described species are recorded. Altogether eleven genera (including two genera represented by females only, and not determined to species) are now known to occur in Nepal. All the material is in the British Museum (Natural History), London, unless otherwise stated.

The terminology of the genitalia follows Hennig and van Emden (*in* Tuxen, 1956). All the drawings of genitalia have been made from macerated abdomina. The setae on the epandrium have not been drawn. The structures of the aedeagus are labelled in some of the figures as follows: ph = phallapodeme, h = hypandrium, pl = processus longus, e = epiphallus, d = distiphallus, po = postgonite, pr = praegonite.

KEY TO GENERA OF ANTHOMYIIDAE S. STR. KNOWN FROM NEPAL (MALES)

1 Frons wide, at least as wide as eye width . . . ***PSEUDOMYOPINA*** (p. 133)

– Frons narrower, at most as wide as ocellar tubercle 2

2 Sternopleural setae 2 + 2; costa on ventral surface with fine setulae or hairs; costal spine distinct and strong, at least 0·75 times length of *r-m*; prostigmatal setae with only a few (1–3) associated hairs; mesopleuron with a developed upper anterior setula 3

– Sternopleural setae 1 + 2 or 1 + 1; costa on ventral surface bare, at least beyond apex of subcostal vein; costal spine absent or generally very small; prostigmatal setae generally with more (4–9) associated hairs (*Delia flavibasis* with stronger costal spine and 1–2 prostigmatal hairs, but then *pra* seta absent); mesopleuron generally without a developed upper anterior setula 4

3 Arista with long rays, total width of plumosity at least as wide as width of third antennal segment; hind tibia with about 3–4 *ad* and 2 *pd* setae ***HYLEMYA*** s. str. (p. 120)

– Arista only long pubescent, longest hairs not more than twice width of basal diameter of arista ; hind tibia with about 5 *ad* and 3 *pd* setae ; tergite 7 + 8 shining black . . . . ***CRASPEDOCHOETA*** (p. 110)

4 Prosternum with lateral setulae ; hypopleuron with fine hairs posterior to spiracle ***CALYTHEA*** (p. 109)

– Prosternum bare ; hypopleuron bare 5

5 Pteropleuron with 1–3 setae on upper margin, below wing base ***EMMESOMYIA*** (p. 120)

– Pteropleuron without setae on upper margin 6

6 Mid tibia with an *av* seta at apical third ; epistome projecting ; hind tibia with 2 *ad* and 2 *pd* setae 7

– Mid tibia without an *av* seta ; epistome not so strongly projecting (in *Delia nepalensis* somewhat projecting, but then *pra* seta absent) ; hind tibia generally with at least 3 *ad* setae 8

7 Blackish species ; face below lunule with a swelling (surstyli forked at apex) ***Nupedia aestiva*** (Mg.) (p. 132)

– Yellowish grey pollinose species ; second antennal segment with some small tubercles on anterior surface (surstyli simple, slender) . . ***Paregle cinerella*** (Fall.) (p. 125)

8 Hind tibia with 13–15 unequal *ad* setae, which in basal half are not strictly uniserial, and with numerous erect fine setulae on *p* and *pv* surfaces ; eyes with short and rather sparse but distinct hairs ; abdomen with dense, short setae on margins of tergite 5 ; about 3 longer posthumeral setae ***Lasiomma eriophthalmum*** (Zett.) (p. 124)

– Hind tibia with at most 9 *ad* setae ; eyes bare or with only microscopic hairs, only visible under high magnification 9

9 *pra* seta about 1·25 times length of posterior notopleural seta ; ratio of distance between *prst dc* rows and *prst acr* rows about 4 : 1 : 4 ; head in profile with profrons rather projecting in front of level of epistome ; postabdomen strongly swollen in profile . . . . ***PHORBIA*** (p. 129)

– *pra* seta at most as long as posterior notopleural seta, or absent ; ratio of *prst acr* and *prst dc* rows between 2 : 1 : 2 and 1 : 1 : 1 ; postabdomen not strongly swollen in profile 10

10 Mid tibia with 2 *pd* setae (in unique holotype of *Pegohylemyia nupera* this character not ascertainable, but 2 *pd* are probably present) ; genitalia with praegonites reduced, small and more or less fused to hypandrium, but with distinct setae, distiphallus small and largely membranous . . . ***PEGOHYLEMYIA*** (p. 126)

— Mid tibia with only 1 *pd* seta, or *pd* absent ; genitalia with praegonites more developed, generally with short, fine setae, weakly joined to hypandrium ; distiphallus long and slender, at least partly sclerotized . . . ***DELIA*** (p. 112)

CALYTHEA Schnabl & Dziedzicki

Calythea Schnabl and Dziedzicki, 1911, *Nova Acta Acad. Caesar. Leop. Carol* **95** : 111 (as subgenus of *Pegomya* R.D.).

Type-species : *Musca albicincta* Fallén, 1825, by monotypy.

This genus occurs in the Palaearctic, Nearctic and Neotropical regions. Only two rather damaged females are represented in the material, which agree in most characters with the widely distributed *C. albicincta* (Fallén). Several undescribed species of *Calythea* are known to me from India, which are closely related to *albicincta*, so the Nepal females are not determined at the present time.

Calythea sp.

Similar to *C. albicincta* (Fallén), with a few fine hairs on hypopleuron posterior to hind spiracle, and on prosternum laterally.

Nepal: 2 mls S.E. of Sikha, 7–8,000 ft., 1 ♀, 20.v.1954 (*J. Quinlan*); Ulleri, 6–7,000 ft., 1 ♀, 19.v.1954 (*J. Quinlan*).

CRASPEDOCHOETA Macquart

Craspedochoeta Macquart, 1851, *Mém. Soc. Sci. Agric. Lille* **1850**: 241; *Dipt. Exot., Suppl.* **4**: 268.

Craspedochaeta auctt. [Unjustified emendation].

Melinia Ringdahl, 1929, *Ent. Tidskr.* **50**: 271.

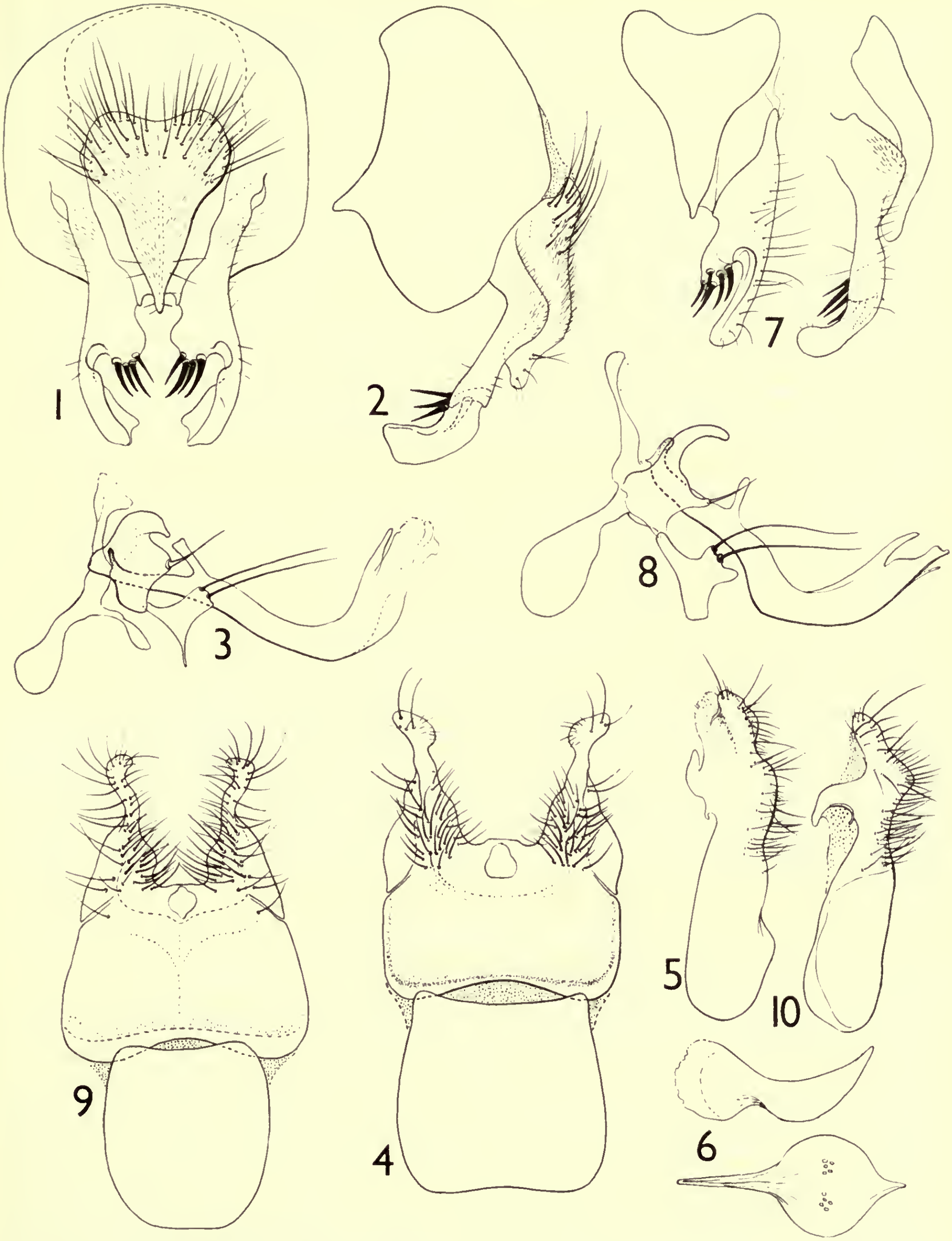
Type-species of *Craspedochoeta*: *Anthomyia punctipennis* Wiedemann, 1830, by monotypy.

This genus is almost world-wide in distribution, and is particularly well represented in the Neotropical region. The Holarctic species *C. pullula* (Zett.) occurs in India, where it differs slightly in the structure of the aedeagus; a detailed examination of Indian material may indicate subspecific status. *C. pullula* is not, so far, known from Nepal. One new species is now described from Nepal and India.

Craspedochoeta hamata sp. n.

(Text-figs. 1–6)

♂ Head: ground colour black. Interfrontal area black, parafrontals, parafacials and genae whitish grey pollinose in certain lights. Eye-margins in front of ocellar tubercle almost touching, separated by about half diameter of anterior ocellus, interfrontalia and parafrontals at this point linear, and interfrontalia above constriction practically absent. Parafrontal at level of lunule about equal to width of third antennal segment, parafacials at narrowest point slightly narrower. In profile frons at lunule projecting further than epistome, face almost flat, slightly receding, hardly reflexed on lower margin. Gena about as wide as third antennal segment, one-sixth of eye-height (0·16). Antennae black, third segment twice as long as second; apex falling short of epistome by two-thirds its own width; arista long pubescent, longest hairs about twice basal diameter. Occiput swollen ventrally, lower margin of head straight posteriorly, curved upwards anteriorly towards epistome, the strong epistomal seta level with lower eye-margin. 7–8 pairs of frontal setae, upper pair about halfway between anterior ocellus and lunule, a pair of rather strong interfrontal setulae above them. Upper postocular setulae rather short, not much longer than the setulae on disc of occiput. Haustellum rather short, mentum about 2·5 times as long as wide, pollinose; palpi black, linear, hardly wider at apex than base. *Thorax*: black in ground colour, with rather dense greyish green and brown pollen. Mesonotum, viewed from in front, with a brownish median vitta along *acr* setae, and perhaps traces of narrow lateral vittae. *acr* setae distinct but rather short, bi-serial, 4–5 rather irregular *prst acr*, which are closer together than to *prst dc*; no fine hairs between *acr* rows. *pra* seta distinct, about two-thirds length of posterior *npl* seta, and finer, distance between *pra* and suture only half distance between *pra* and *sa* seta. One or two developed upper anterior mesopleural setulae, and 2–3 longer setulae in front of lower part of mesopleural row. One long and strong, and one finer and shorter propleural seta, and one strong and two shorter prostigmatal setae; no fine hairs around their bases. *stpl* 2+2, lower anterior seta short and fine, lower posterior three-quarters length of upper seta. Fringe of hairs surrounding anterior spiracle pale brownish yellow, on posterior spiracle dark brown. Scutellum concolorous with mesonotum, bare in central and basal parts of disc, some fine hairs present ventrally at apex.



Figs. 1–10. *Craspedochoeta* spp. Figs. 1–6. *C. hamata* sp. n. (paratype) : 1, ♂ hypopygium, caudal view ; 2, hypogium, profile ; 3, aedeagus ; 4, 4th and 5th sternite ; 5, 5th sternite, profile ; 6, sperm pump. Figs. 7–10. *C. pullula* (Zett.) (England) : 7, ♂ hypopygium, cercal plate and surstylus ; 8, aedeagus ; 9, 4th and 5th sternite ; 10, 5th sternite, profile.

Wings : membrane very slightly pale brownish tinged, not darkened at base. Costal spine distinct, a little shorter than *r-m* ; *r-m* and *m-m* distinctly suffused brownish. *m-m* sinuous, last section of M_{1+2} about one and three-fifths (1·6) times length of preceding section. Costa with fine setulae or hairs ventrally on whole length. Calyptrae concolorous with wing base, lower calypter not projecting beyond upper. Halteres yellow. *Legs* : black ; fore tibia with a strong median *pv* seta. Mid femur without distinct *av*, 5–6 long basal *pv* setae. Mid tibia with one strong *ad* seta at apical third, one *pd* at same level, a slightly shorter *pd* just above middle, 1–2 short *p* setae, and a strong *pv* seta just below the strong *ad* and *pd*. Hind femur with *av* and *pv* setae on whole length. Hind tibia with 5–6 unequal *ad*, 3 *pd* (upper one shorter), about 4 *av* and about 6 semi-erect fine setulae posteriorly in basal half, one of which is more robust, and the middle ones irregularly placed, biserial. The strong *pv* seta apically, which is often present in *Craspedochoeta*, is very small or absent. *Abdomen* : rather robust, viewed from above, widest at posterior margin of T1+2, tapering slightly from there to apex, slightly less than twice as long as wide (1·8). In profile semi-depressed at base, becoming almost cylindrical at T4 and T5. Viewed from behind, densely greyish pollinose, with a distinct black interrupted median vitta (width equal to diameter of hind femur), the breaks occurring on hind margins of tergites ; on T5 the vitta occupies only half length of tergite. T7+8 shining black, in sharp contrast to other tergites ; T9 black, with light greyish pollen. 5th sternite, in profile, slightly elbowed.

Body-length 6 mm., wing-length 6 mm.

♀ unknown.

Holotype ♂. INDIA : Simla, W. Himalayas, 7–8,000 ft., 7.v.1910 (*Annandale*).

Paratype. NEPAL : Sukhwani, 1 ♂, 15–16.ii.1908.

I have also seen a female, which may belong to this species, from BALUCHISTAN : Quetta, iii.1931 (*A. C. Ben*), but which is not included in the type series.

C. hamata differs from *pullula* as follows : hind tibia with the *pv* apical seta very short or absent, costa with anterior setulae shorter, *pra* seta slightly shorter than posterior *npl* seta, abdomen less flattened in basal half. Details of the genitalia of *C. pullula* (England) are given in Text-figs. 7–10 ; the most conspicuous difference is in the form of the postgonites (Text-figs. 3, 8). Examples of Indian *pullula* have the same form of postgonite as European examples, though the distiphallus is slightly different.

DELIA Robineau-Desvoidy

Delia Robineau-Desvoidy, 1830, *Mém. prés. div. Sav. Acad. Sci. Inst. Fr.* **2** : 571.

Type-species : *Delia floricola* Robineau-Desvoidy, 1830, by designation of Coquillett, 1910, *Proc. U.S. natn. Mus.* **37** : 531 (=*Anthomyia cardui* Meigen, 1826).

The synonymy of *D. floricola* is somewhat doubtful. In the original description of *floricola* Robineau-Desvoidy states : " . . . il se distingue de toutes les autres espèces par le premier article des tarses intermédiares un peu concave en dedans, tandis que le second article est un peu dilaté, au sommet ". This would indicate that *floricola*, if not synonymous with *cardui*, at least must belong to that group of species (which includes *cardui*) with a ventral swelling on the second segment of the middle tarsi. I therefore follow Collin (1931) in the use of the name *Delia* for this group of species, and include with it other species which do not have the middle tarsal character, but are related by the structure of the surstyli, form of distiphallus, and sometimes the possession of male secondary sexual chaetotactic characters. Three new, and one previously described species are now recorded from Nepal.

KEY TO NEPALESE SPECIES OF *DELIA* (MALES)

1 *pra* seta absent 2

– *pra* seta distinct, even if short and fine 3

2 *acr* setae almost completely absent, at most 1–2 fine *prst* pairs, and 2 pairs of fine prescutellar setae ; epistome somewhat projecting ; 5th sternite with long ventrally directed setae on whole length of lobes (Text-fig. 14) ; calyptrae paler than darkened wing base . . . . ***nepalensis*** sp. n.

– *acr* setae fine and short, but distinct on either side of suture ; calyptrae pale yellowish brown, concolorous with wing base . . . . ***flavibasis*** Stein

3 Middle metatarsus dorsally with a fringe of curved setulose hairs ; mid tibia with 1 *pd* and 1 *ad* seta ; 4–5 pairs of frontal setae ; *pra* seta only about three-quarters length of posterior *npl* seta ; hind tibia with 7–9 *ad* setae ; 5th sternite with lobes bearing strong short apical spines (Text-fig. 19) but not long ventrally directed setae . . . . ***coei*** sp. n.

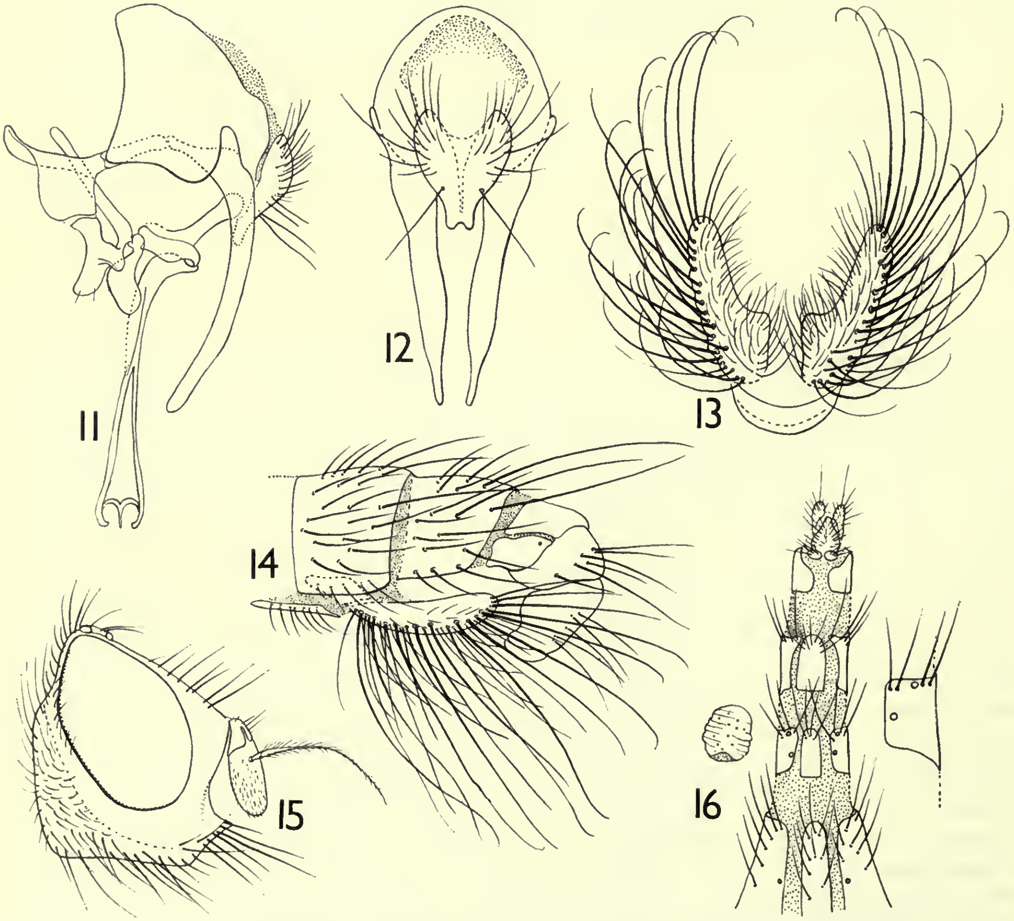
– Middle metatarsus without dorsal fringe ; mid tibia without *pd* or *ad* setae ; 7–8 pairs of frontal setae ; *pra* seta equal to length of posterior *npl* seta ; hind tibia with 3–4 *ad* setae ; 5th sternite with long ventrally directed setae on apical half of lobes (Text-fig. 24) . . . . ***repens*** sp. n.

Delia nepalensis sp. n.

(Text-figs. 11–16)

♂ *Head* : ground colour of whole head black, parafrontals, parafacials and genae with whitish grey pollen in certain lights, occiput with darker pollen ; interfrontalia matt black, except when viewed from a low angle in front ; viewed in profile, parafrontals at level of lunule with a darker shifting patch which reaches on the parafacials to the level of insertion of arista. Eye-margins on frons nearly touching, separated at narrowest part by a little more than diameter of anterior ocellus ; parafrontal at level of lunule equal to width of third antennal segment, parafacial slightly narrowing towards lower margin of eye ; width of gena about one-quarter of eye-height (0·28). Lower part of occiput rather swollen ; lower margin of gena straight, then obliquely turned upwards at a point level with anterior margin of eye (Text-fig. 15). Epistome projecting as far as frons at lunule. Antennae completely black, third antennal segment about 2·5 times length of second segment, the apex almost reaching epistome ; arista distinctly pubescent, total width of hairs at least one-third width of third antennal segment. Frontal setae about 4 pairs, a very short pair of cruciate interfrontal setulae present above uppermost pair. Postocular setulae uniserial, rather short and becoming even shorter laterally, the vertical setae slightly stronger and differentiated from the adjacent upper postocular setulae ; upper part of occiput bare. Palpi black, hardly widened at apex ; haustellum rather long and slender, the pollinose mentum parallel-sided, about 6 times as long as wide, total length of proboscis nearly equal to head height. *Thorax* : completely black in ground colour ; mesonotum viewed from in front with rather dense greyish pollen, a brownish pollinose median vitta along *acr*, 2 paramedian brownish vittae along *dc* setae, which are slightly narrower, and 2 brownish pollinose lateral patches covering the bases of the *ph* and *ia* setae, the humeral and notopleural areas being lighter grey pollinose. All these brownish vittae reach anteriorly only as far as the level of the first *prst dc*. Pleurae greyish pollinose. *acr* practically absent, only 1–2 fine *prst* setulae, rather close together, and 2 pairs of fine *post acr*, the prescutellar pair stronger. Mesonotum almost completely devoid of accessory setulae, a few in setae rows, on humeri, and 1–2 between anterior *ia* seta and suture, area between *ia* and *sa* seta bare. *pra* completely absent.

Notopleuron bare apart from the two setae. No developed upper anterior mesopleural setula. One long and one short propleural seta ; the prostigmatal setae appear to be absent, only a few fine hairs present. *stpl* 1 + 2, lower posterior seta about two-thirds length of upper. Scutellum black with brownish grey pollen, practically bare on disc, at most two setulae laterally ; ventrally at apex with a few fine pale hairs. *Wings* : slightly light brownish suffused, base distinctly brownish. Costal spine not differentiated from costal setulae. Costa bare on ventral surface. *m-m* almost straight, last section of M_{1+2} about one and three-quarters (1·76) times length of preceding section. Calyptrae whitish, contrasting with brownish wing base, lower calypter much shorter than upper. Halteres yellow. *Legs :* black, including tarsi. Fore tibia with a *p* seta. Mid femur without *av* setae, a *pv* row in basal three-quarters, becoming shorter medially. Mid tibia with one *ad* and one *pd* median seta, equal in length, the *ad* more distal by half diameter of tibia ; 2–3 short *pv* setulae. Hind femur without *pv*, a few short *av* in apical half only. Hind tibia with 3 *pd*, proximal one short, 2 *ad* setae, 2 *av* setae, no *pv* preapical seta present. *Abdomen* : black, with greyish and brownish pollen. A little longer than thorax, dorsoventrally compressed, viewed from above with slightly curved margins.



FIGS. 11–16. *Delia nepalensis* sp. n. (holotype) : 11, ♂ hypopygium, profile ; 12, hypopygium, caudal view ; 13, 5th sternite ; 14, postabdomen, profile ; 15, ♂ head ; 16, ♀ ovipositor, ventral view.

Viewed from behind with a suffused black median vitta which is as wide as diameter of hind femur, and is weakly connected to more light brownish pollen on the basal margins of T2–T5, the remaining part of tergites with rather greenish grey pollen. 5th sternite in profile (Text-fig. 14) with long strong ventrally directed, and slightly inwardly curved setae, which are about as long as half length of abdomen, those towards apices of lobes being directed posteriorly.

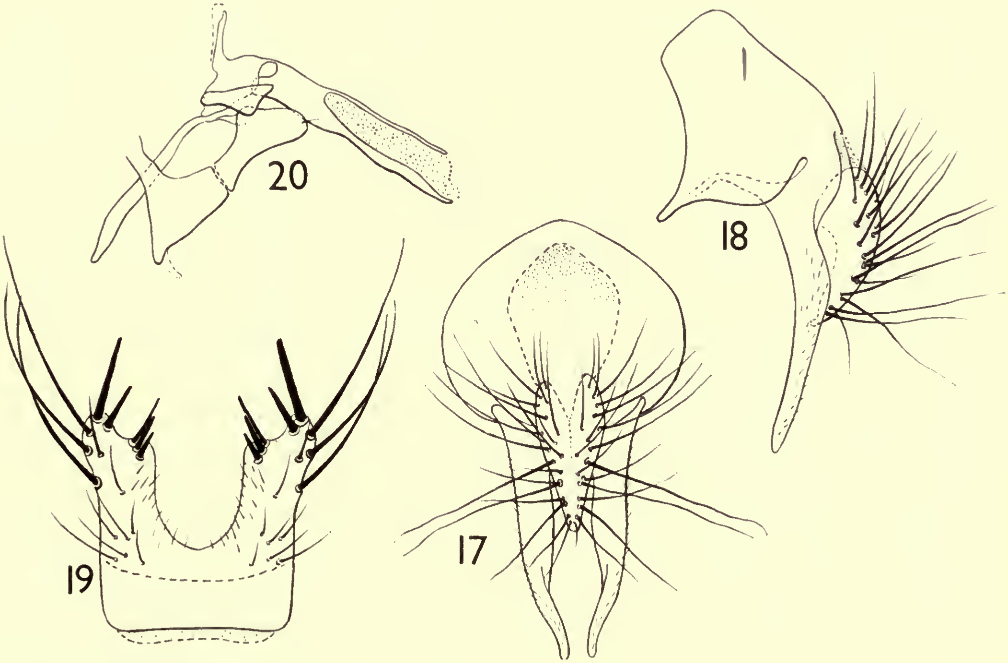
Body-length 4·5 mm., wing-length 4 mm.

♀. Agrees generally with the ♂, except for the following : mid tibia with a small median *av* seta, lower posterior sternopleural seta absent or hair-like, *prst acr* setae absent, costal spine small, but distinct from anterior costal setulae. Head with the interfrontal area brownish anteriorly, black posteriorly ; eye : frons : eye ratio is 7 : 11 : 7. Frontal setae and cruciate interfrontals rather weak, inner verticals stronger, outer verticals two-thirds length of inner. Width of gena 0·41 times height of an eye. The ovipositor is figured in Text-fig. 16.

Holotype ♂. NEPAL : 2 mls S.E. Sikha, 7,000–8,000 ft., 23.v.1954 (*J. Quinlan*).

Paratypes. Same locality as holotype, 3 ♀, 23.v.1954 ; 1 ♀, 20.v.1954 (*J. Quinlan*) ; Ulleri, 6–7,000 ft., 2 ♀, 19.v.1954 (*J. Quinlan*).

D. nepalensis agrees in nearly all details with the description of *Chortophila nigribasis* Stein, (1908) from Tibet. Prof. Hennig (in litt.) has kindly supplied me with a drawing of the genitalia of a syntype of *nigribasis*, and the two species, although very closely related, differ in the chaetotaxy of the 5th sternite. In *nigribasis* the lobes of the 5th sternite are much longer, and the ventrally directed setae are more crowded together at the base, whereas in *nepalensis* they are more or less



FIGS. 17–20. *Delia coei* sp. n. (paratype) : 17, ♂ hypopygium, caudal view ; 18, hypopygium, profile ; 19, 5th sternite ; 20, aedeagus.

evenly distributed along the length of the lobes (Text-fig. 14). Stein, in the original description of *nigribasis*, gives the genae as nearly half an eye-height, but in a profile drawing of the head sent by Prof. Hennig, the genae are about the same width as in *nepalensis* (0·28 times eye-height). The hypopygium is very similar in the two species.

***Delia coei* sp. n.**

(Text-figs. 17–21)

♂ *Head* : eye-margins on frons almost touching, separated by less than diameter of anterior ocellus ; interfrontalia and parafrontals at this point linear. Width of parafrontal at level of lunule equal to width of third antennal segment ; parafacial then narrowing to about two-thirds this width at level of lower eye-margin. Interfrontal area orange in ground colour, with greyish white pollinosity, parafacials adjacent lunule also orange, but towards genae becoming brownish, with greyish or whitish pollen ; face grey. Gena about one-fifth (0·2) height of eye. Occiput black with dark greyish pollen. Upper postocular setulae uniserial, moderately long, but becoming much shorter laterally ; upper part of occiput without setulae below postocular row. Vertical and ocellar setae about 4–5 pairs, slightly stronger than postocular setae. Frontal setae about 4–5 pairs, upper pairs hardly shorter than lower ; a pair of fine proclinate cruciate interfrontal setulae present above upper frontal setae. Antennae completely black, third segment about 1·5 times length of second, falling slightly short of epistome ; arista thickly long pubescent, the total width of hairing at widest part nearly half width of third antennal segment. Palpi black, very slender at base, becoming a little wider at apex. Mentum of haustellum black, semi-shining, but with thin whitish pollen, rather stout (nearly half as wide as long). *Thorax* : completely black in ground colour, with brownish and greyish pollen. Mesonotum, viewed from in front, with shifting indistinct vittae and patches, but at certain angles a rather wide darker vitta is visible between the *acr* setae, and faint dark patches around the bases of the *dc* setae, the lateral areas of mesonotum also darker. Pleurae with rather thin greyish pollinosity. *acr* setae strictly biserial, rows separated from each other by a distance equal to that between *acr* and *dc* rows ; one pair of stronger *prst acr* (at least three-quarters length of first *prst dc*), the remaining *acr* very fine, short and hair-like, including prescutellar pair, no hairs between *acr* rows. Accessory setulae and hairs of mesonotum very sparse, a few in bristle rows, and laterally around suture. 2 unequal propleural setae, 2 unequal prostigmatal setae, with 3–4 associated hairs. *pra* seta about three-quarters length of posterior *npl* seta, situated almost equidistant from suture and *sa*. Notopleural area bare apart from the two strong setae. No developed upper anterior mesopleural setulae. *stpl* 1 + 2, lower posterior seta about three-quarters length of upper. Scutellum black with greyish pollen ; completely devoid of setulae on disc apart from 2 fine setae laterally, apex ventrally with a few fine pale hairs. *Wings* : slightly brownish suffused, especially anteriorly at base. Veins brown. Costal spine absent or indistinguishable from anterior setulae. Costa bare ventrally on whole length. *m-m* straight but rather oblique. Last section of M_{1+2} about 1·66 times length of preceding section. Upper calypter brownish suffused, with brown margin and brown fringe, lower calypter much smaller and paler, with orange-brown margin and fringe. Halteres yellow. *Legs* : black. Fore tibia with one strong median *pv* seta, and at apex with a strong blunt *pv* apical seta. Mid femur with a complete row of *pv* setae. Mid tibia with a strong *pd* just before middle, a smaller *ad* below middle, and 2–3 short *pv* setae ; mid metatarsus with a dorsal fringe of curved setulae. Hind femur with some very short fine *av* setae on apical half only, those at middle hardly one-third as long as diameter of femur, becoming longer at apex ; a few *pv* setae on apical third only. Hind tibia with about 7–9 unequal *ad* setae, 3 long *pd* setae ; *a* and *av* surfaces with numerous short erect setulae in more than one row, those towards apex becoming shorter ; *p* and *pv* surfaces with numerous slightly longer semi-erect setulae at base, becoming shorter towards middle of tibia, the rows ending at apical two-thirds ; *pv* apical seta absent. *Abdomen* :

black in ground colour, with rather thin brownish grey pollen ; about as long as thorax, elongate-ovate, dorsoventrally compressed, only weakly swollen at apex. Viewed from behind with a very suffused wide median vitta, connected with basal dark suffusion of tergites.

Body-length 3·5 mm., wing-length 3·6 mm.

♀. The two female paratypes are teneral. They agree in most respects, apart from the male secondary sexual characters, with the male. They differ in having the *acr* setae even finer (apart from a stronger prescutellar pair), and lower *stpl* seta very fine or absent.

Holotype ♂. NEPAL : Taplejung District, damp evergreen oak forest above Sangu, c. 8,500 ft., 2–26.xi.1961 (*R. L. Coe*).

Paratypes. 2 ♂, 2 ♀, same data as holotype (except 1 ♂, 1 ♀ collected at 9,000 ft.).

D. coei is related to the widely distributed *D. liturata* (Meigen, 1838) (=*trichodactyla* Rondani, 1866) and those species of *Delia* which possess in the male a comb-like fringe of erect setulae on the hind tibia, and a dorsal fringe on the middle metatarsus. The arrangement of strong spines on the 5th sternite (Text-fig. 19), and the longer membranous bifurcation of the distiphallus (Text-fig. 20) appear to be characteristic of *coei*.

***Delia repens* sp. n.**

(Text-figs. 21–24)

♂ *Head* : black in ground colour, with dark greyish pollen which in certain directions is whitish grey. Eye-margins on frons at narrowest part separated by nearly twice diameter of anterior ocellus, interfrontalia distinct throughout ; parafrontals at level of lunule, and parafacials rather wide, at least one and a half times width of third antennal segment, this width being well maintained towards lower part of parafacial. Gena at narrowest part wide, between two-fifths (0·42) of eye-height in holotype, and slightly more than one-quarter (0·29) in paratype. Occiput rather strongly swollen in ventral two-thirds. Epistome in profile not projecting, face rather straight and only slightly and evenly curved. Antennae black, third segment twice as long as second, apex not reaching epistome by about its own width, arista swollen at base, very short pubescent, the longest hairs not as long as basal diameter of arista. Palpi black, slender. Mentum of haustellum black, dark grey pollinose, not shining, about three times as long as wide, parallel-sided. 7–8 pairs of frontal setae, and one pair of fine cruciate interfrontal setulae present. Upper postocular setulae fine, mainly uniserial, with at most 1–2 scattered hairs immediately below. *Thorax* : completely black in ground colour, with greyish, bluish grey and brownish pollen. Mesonotum with diffused brown pollen between *dc* setae, which tends to form an indistinct median vitta between *acr* setulae, and a wider diffused brown vitta along the *ia* setae, which contrasts (when viewed from in front) with the faintly bluish white notopleural area. Viewed from behind, the dark median *prst* vitta is bordered by very narrow lighter pollinose streaks. Posterior part of mesopleuron with a brown pollinose patch. Pleurae lighter grey pollinose. *acr* setulae very fine and hairlike, not stronger than accessory setulose hairs of mesonotum ; biserial, rows close together, distance between *prst acr* and *dc* setae twice distance between *acr* rows. *post acr* becoming longer, but not stronger, and more widely separated in front of scutellum. *pra* seta equal to posterior *npl*, twice as distant from *sa* as from suture. Notopleural area bare in holotype, but with one hair on each side between strong setae in paratype. Mesopleuron without any developed upper anterior setulae. One strong and one weak propleural seta, one or two prostigmatal setae, and 5–6 fine associated hairs. *stpl* setae 1 + 1. Scutellum black, dark grey pollinose, with disc brownish ; central part of disc bare, only 2–3 setulose hairs at sides close to the strong marginal setae, ventral surface with some fine pale hairs apically. *Wings* : membrane light brownish tinged. Veins dark brown. Costa without fine hairs or setulae ventrally, at least beyond subcostal vein. *m-m* very weakly sinuate, rather oblique, last section of M_{1+2} slightly more than one and a half (1·62) times length of preceding section. Costal spine hardly differentiated from anterior costal setulae. Calyptrae pale whitish yellow, contrasting with brownish wing base, fringe whitish yellow, lower calypter much shorter than upper. Halteres brownish yellow. *Legs* : black, including tarsi. Fore tibia with a short median *pv* seta. Mid femur with about 5 *pv* setae in basal half. Mid tibia apparently without *ad* or *pd* setae, no *av* seta, only 2 *p* setae. Hind femur with about 5 *av* in apical half, rather short in middle, becoming longer at apex, *pv* surface bare except for 1–2 short setae at extreme apex. Hind tibia with 3–4 *ad* setae, apical one the longest, the one above it short ; about 5 *pd* setae of unequal length, the apical one longest ; 2–5 short fine *p* setulose hairs in basal half. *Abdomen* : black, with grey pollen. About as long as head and thorax combined, dorsoventrally compressed, more or less parallel-sided, T2 and T3 the same width, T4 narrower on hind margin. Viewed from behind with a distinct black median vitta, which is wider on fore-margins of each tergite, and is joined there to distinct black hind-marginal cross-bands which cover about one-third length of tergites on T3 and T4. 4th sternite with 2–3 long lateral, ventrally directed setae, 5th sternite with some long ventrally directed setae at apex.

Body-length 5·5 mm., wing-length 6 mm.

♀ unknown.

Holotype ♂. NEPAL : Mingoo Ersttrip der Hilary-Expedition,* Hang oberhalb beweidete Zwergstrauchheide, rund 4,900 m., 28.v.1961 (*H. Janetschek*) [in Deutsches Entomologisches Institut, Berlin].

Paratype. NEPAL : Baitadi, Tinkar Khola, 13,000 ft., 1 ♂, 3.vii.1953 (*J. B. Tyson*) [in British Museum (Nat. Hist.)].

D. repens is remarkably similar in general appearance to the European *Delia* (*Erioischia*) *pilipyga* (Villeneuve, 1917), having the same robust form of head with

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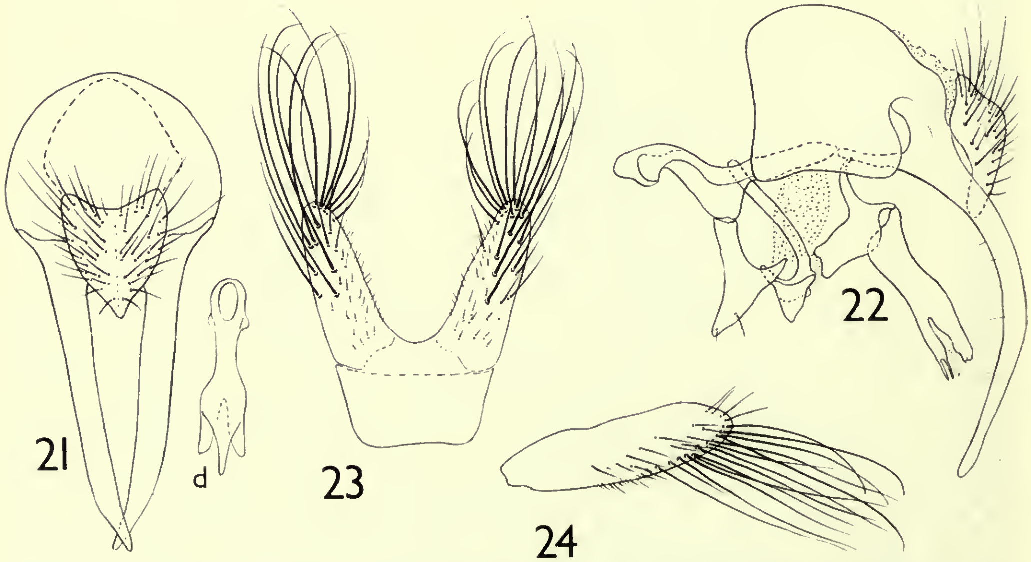
* Probably Mingbo Airstrip of the Hillary Expedition.



FIGS. 21–24. *Delia repens* sp. n. (paratype) : 21, ♂ hypopygium, caudal view, d, distiphallus ; 22, hypopygium, profile ; 23, 5th sternite ; 24, 5th sternite, profile.

wide parafacials, and long setae on the lobes of 5th sternite. *Erioischia* Lioy, 1864 (type-species: *Anthomyia brassicae* Wiedemann, 1833 (=*floccosa* Macquart, 1835)) can apparently only be separated from *Delia* by the possession of hairs on the ventral surface of the costa, and on notopleural area between strong setae; it is doubtful if it can be maintained as a distinct group, and Huckett (1965*b*) has treated the group as part of his subgenus *Delia* in the genus *Hylemya*. *Delia repens* differs from *pilipyga* (apart from the characters mentioned above) in the more slender surstyli, shorter distiphallus, *stpl* 1 : 1 (in *pilipyga* the lower posterior seta about half as long as upper), no stronger *prst acr* setae.

Delia flavibasis (Stein)

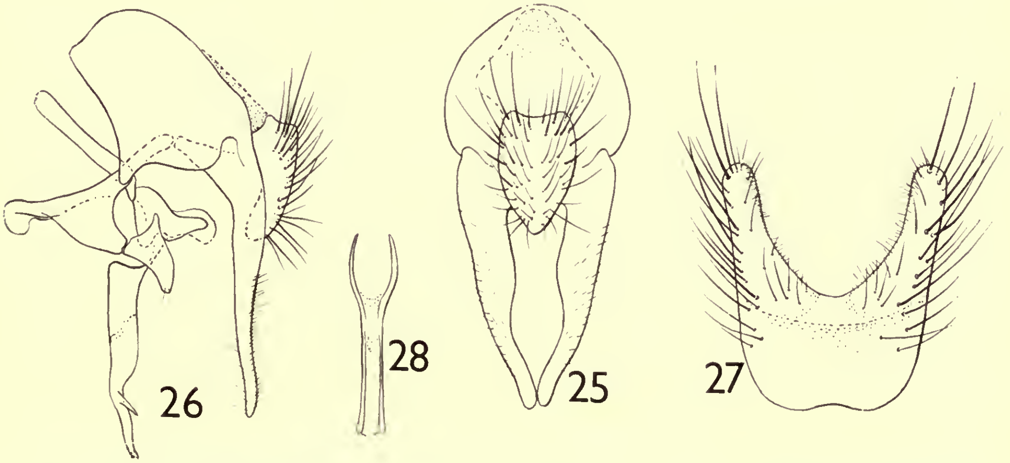
(Text-figs. 25–28)

Chortophila flavibasis Stein, 1903, *Mitt. zool. Mus. Berl.* **2**: 121.

Hind tibia without a comb-like fringe of fine *pv* setulae, *pra* seta absent, arista rather distinctly pubescent, setae of legs rather short and fine, *acr* setae very short.

D. flavibasis was originally described from Egypt. It is probably a widely distributed species in the southern Palaearctic region, and occurs in India.

NEPAL: 2 mls S.W. Ulleri, 6–7,000 ft., 2 ♂, 1 ♀, 18.v.1954 (*J. Quinlan*); Ulleri, 6–7,000 ft., 1 ♂, 1 ♀, 19.v.1954 (*J. Quinlan*); Bakhri Kharka, 5,500 ft., 1 ♂, 4 ♀, 24.iv.1954, 1 ♀, 25.iv.1954 (*J. Quinlan*); Silgarhi-Doti, Chainpur, 6,000 ft., 1 ♂, 27.vii.1953 (*J. B. Tyson*); 2 mls S.W. of Rambrong, 8,000 ft., 2 ♀, 26.iv.1954 (*J. Quinlan*).



FIGS. 25–28. *Delia flavibasis* (Stein): 25, ♂ hypopygium, caudal view; 26, hypopygium, profile; 27, 5th sternite; 28, distiphallus.

EMMESOMYIA Malloch

Emmesomyia Malloch, 1917, *Bull. Brooklyn ent. Soc.* **12** : 114.

Type-species : *Emmesomyia unica* Malloch, 1917, by original designation. (=*Spilogaster socialis* Stein, 1898).

Two species of *Emmesomyia* were represented in the material, both by rather badly damaged females. No attempt has been made to identify them to species, as the Oriental species of *Emmesomyia* are greatly in need of revision.

Emmesomyia sp. A ♀

This specimen has only one seta on the upper part of the pteropleuron.

NEPAL : Ulleri, 6–7,000 ft., 1 ♀, 19.v.1954 (*J. Quinlan*).

Emmesomyia sp. B ♀

This specimen has three setae on the upper part of the pteropleuron.

NEPAL : Taplejung District, Sangu, c. 6,200 ft., on yellow blooms of cultivated Composite, 1 ♀, 10–16.xii.1961 (*R. L. Coe*).

HYLEMYA Robineau-Desvoidy

Hylemya Robineau-Desvoidy, 1830, *Mém. prés. div. Sav. Acad. Sci. Inst. Fr.* **2** : 550.
Hylemyia auctt. [Unjustified emendation].

Type-species : *Hylemya strenua* Robineau-Desvoidy, 1830, by designation of Coquillett, 1910, *Proc. U.S. natn. Mus.* **37** : 554 (=*Musca strigosa* Fabricius, 1794, preocc. Linnaeus, 1790).

An earlier designation of *Musca strigosa* Fall. [sic] by Rondani (1856, *Dipt. Ital. Prodr.* **1** : 96) is invalid (*Int. Code zool. Nomencl.*, Art. 69 (a) (iv)).

In this paper I have used the name *Hylemya* for the restricted group of species related to *H. strenua* by the following characters : arista long plumose, the longest rays at least as long as width of third antennal segment ; sternopleural setae 2 + 2 ; a developed upper anterior mesopleural setula ; costa with ventral setulae ; disc of scutellum not covered with setulae ; aedeagus with distiphallus slender and simple ; surstyli simple. Two species are recorded below from Nepal, one being described as new. In the following key I have included two Palaearctic species, *H. strenua* R.D. and *variabilis* Stein, which have rather similar genitalia. *H. variata* (Fallén), which is another Palaearctic species, has much longer backwardly curved surstyli, if Stein (1916 : 155, footnote) is correct in his limitation of Fallén's name to this species. Huckett (1924) has apparently used the name *variata* for *variabilis* in dealing with the Nearctic fauna. *H. strenua* genitalia are figured in Text-figs. 33, 34, 38, 39 ; *H. variabilis* in Text-figs. 31 and 32.

KEY TO SPECIES OF *HYLEMYA* (MALES)

1 Legs partly yellow (at least mid and hind tibia yellow) ; arista with longer rays (Text-figs. 40, 42) ; surstyli with more numerous and longer hairs or setulae on outer margins (Text-figs. 33, 44) 2

– Legs completely black, or at most only a trace of reddening on mid and hind tibia ; arista with shorter rays (Text-figs. 37, 43) ; surstyli with only a few short hairs on outer margins (Text-figs. 29, 31) 3

2 Femora in part yellow, coxae and trochanters more or less yellow ; *acr* setae absent on either side of suture (i.e. only anterior *prst* and prescutellar setae present) ; anterior margins of surstyli in profile with longer hairs (Text-figs. 45) ; 5th sternite generally with yellow apices to lobes ; hind tibia with 2 *pd* setae ; mesonotum and abdomen more shining in parts . . . . . . ***detracta*** (Walker)

– Femora black ; *acr* setae rows complete ; 5th sternite lobes dark ; hind tibia with 3–4 *pd* setae ; mesonotum and abdomen not so shining ***strenua*** R.D. (= ***strigosa*** F.)

3 The black interfrontalia obsolescent for a short distance on frons (eye-margins separated by almost half diameter of anterior ocellus) ; anterior spicules on first costal section less distinct and less erect ; cercal plate narrower (Text-fig. 29) ***probilis*** sp. n.

– The black interfrontalia linear but distinct throughout (eye-margins separated by 1·25 times diameter of anterior ocellus) ; anterior spicules on first costal section more distinct and erect ; cercal plate wider (Text-fig. 31) . . . ***variabilis*** Stein

Hylemya probilis sp. n.

(Text-figs. 29, 30, 35, 36, 37)

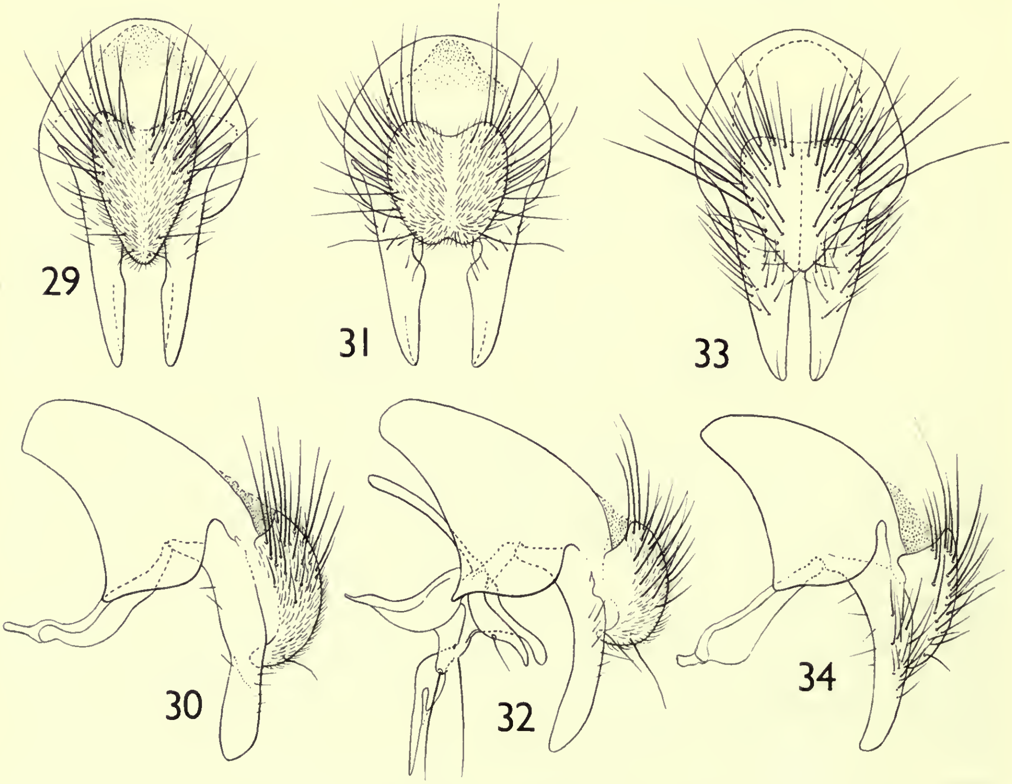
♂ *Head* : black in ground colour, with light grey pollen. Eye-margins on frons almost touching, separated by less than half diameter of anterior ocellus, the black interfrontalia obsolescent on part of frons. Parafrontal at level of lunule slightly less than width of third antennal segment, parafacial becoming slightly less wide at level of middle of third antennal segment. Antennae black, third segment twice length of second, apex falling slightly short of epistome. Arista long plumose, total width of hairing nearly twice width of third antennal segment. Gena slightly less than one-fifth (0·18) of eye-height. Frontal setae about 6 pairs, and one pair of cruciate interfrontal setulae. Upper postocular setulae uniserial, rather short except for upper ones next to ocellar triangle ; space immediately below upper postocular row bare. Palpi black, almost parallel-sided. Mentum of haustellum black, grey pollinose, not shining, at least 4 times as long as wide. Epistome slightly projecting. *Thorax* : black, with light grey and brownish pollen. Mesonotum with a distinct brown pollinose median vitta, which is slightly wider than width of *acr* rows, brown spots at the bases of all *dc* setae, and brown lateral vittae along the *ia* setae. Pleurae grey pollinose, with a brown patch on upper part of mesopleuron. *acr* setae biserial, without hairs between rows, anterior pair of *prst acr* slightly stronger than second *prst* pair (equal to two-thirds length of first *prst dc*) ; *prst acr* rows slightly closer together than to *dc* rows ; *post acr* short, becoming longer in front of scutellum. *pra* seta rather short, about two-thirds length of posterior *npl* seta. One long and one shorter propleural seta, one strong prostigmatal seta with 2–3 associated hairs ; a developed upper anterior mesopleural setula present. *stpl* 2 + 2, lower anterior seta short (half length of upper), lower posterior seta as long and strong as upper posterior. Scutellum concolorous with mesonotum, the median brown pollinose vitta of mesonotum continued on to disc of scutellum, disc of the latter bare, apart from 2–3 fine setulae on lateral parts near strong marginal setae. *Wings* : membrane faintly brownish suffused, veins brownish. Costa with hairs on ventral surface. Anterior spicules of costa (especially in basal section as far as costal spine) not very erect or distinct, hardly differentiated from the semi-erect hairs and setulae. *m-m* oblique and rather sinuous, last section of M_{1+2} about one and two-thirds (1·68) length of preceding section. Costal spine nearly as long as *r-m*. Calyptrae whitish yellow, with whitish yellow fringe, lower calypter at most two-thirds length of upper. *Legs* : black, including tarsi. Fore tibia with a *d* or *ad* seta at apical third, and a longer *pv* almost at middle. Mid femur with 2 *pv* at extreme base. Mid tibia with one *ad* at apical third, 2 *pd*, the distal seta stronger and nearly at the same level as *ad*, one *p* or *pv* seta also at same level. Hind femur with about 8 *av*, and 4–5 *pv* setae, the latter only in basal two-thirds. Hind tibia with 3 *ad*, 2 *pd*, about 3 erect *p* setulae in basal half, and 2–3 *av* in apical half. *Abdomen* : black in ground colour, with greyish pollen, and a narrow dark median vitta ; only slightly dorsoventrally compressed.

Body-length 7·5 mm., wing-length 6 mm.

♀ unknown.

Holotype ♂. NEPAL : Taplejung District, damp evergreen oak forest above Sangu, c. 8,500 ft., 2–26.xi.1961 (*R. L. Coe*).

Apart from the differences in the genitalia, *H. probilis* differs from *strenua* R.D. in having completely black legs, mentum of haustellum at least 4 times as long as wide (in *strenua* hardly 3 times), hind tibia with only 2 *pd* setae (*strenua* with 3–4 *pd* setae). From *variabilis* Stein it differs in having the eye-margins on frons almost touching, with the black interfrontalia obsolescent for some distance, and anterior spicules of costa less distinct and not so erect.



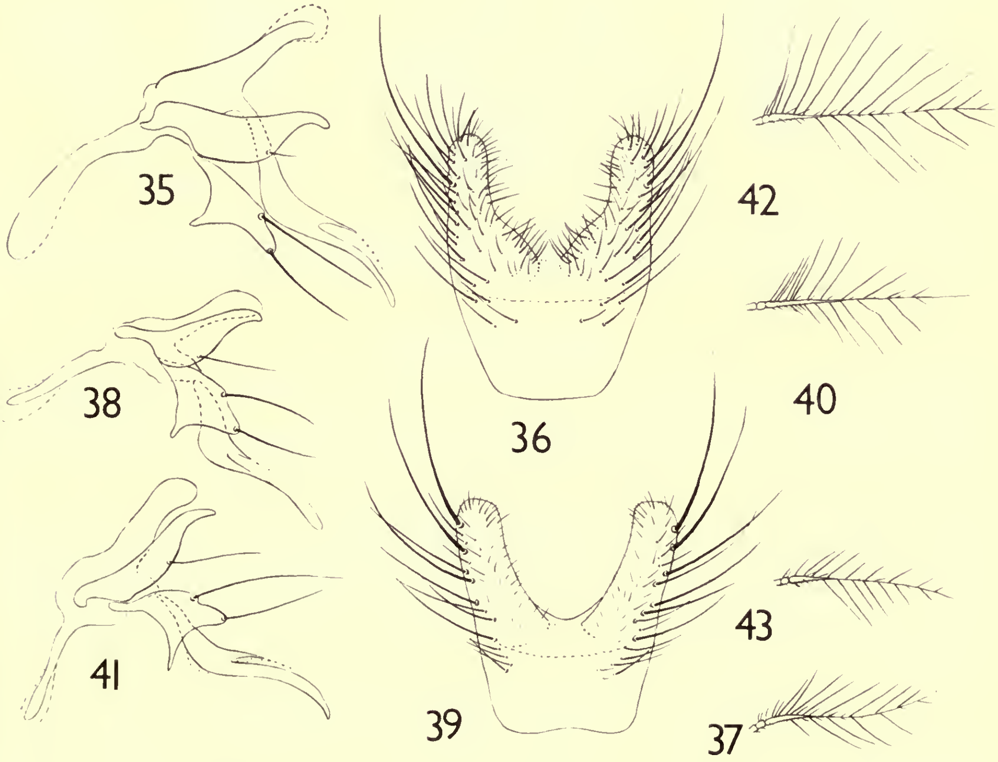
FIGS. 29–34. *Hylemya* spp. Figs. 29–30. *H. probilis* sp. n. (holotype) : 29, ♂ hypopygium, caudal view ; 30, hypopygium, profile. Figs. 31–32. *H. variabilis* Stein (England) : 31, ♂ hypopygium, caudal view ; 32, hypopygium, profile. Figs. 33–34. *H. strenua* R.D. (=*strigosa* F.) (England) : 33, ♂ hypopygium, caudal view ; 34, hypopygium, profile.

Hylemya detracta (Walker)

(Text-figs. 41, 42, 44, 45, 46)

Anthomyia detracta Walker, 1852, *Insect. Saund.* **1** : 356.

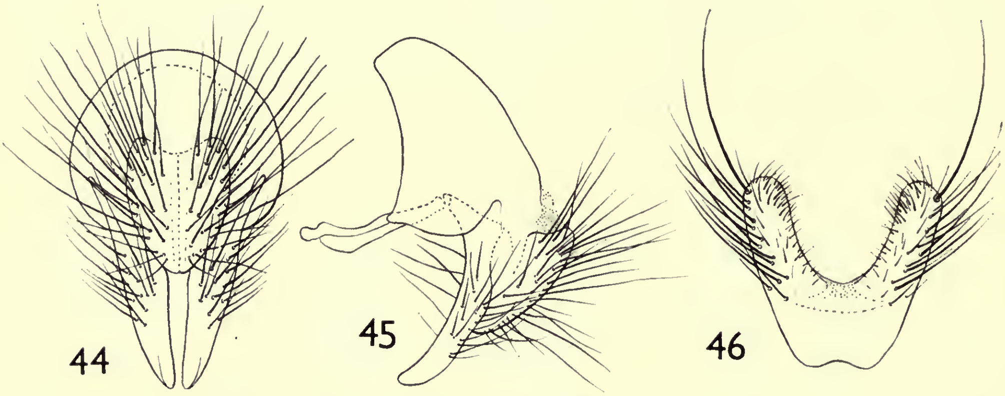
H. detracta appears to be very variable in both size and colour. The holotype ♂ (from the East Indies) is in the British Museum (Nat. Hist.), and I have examined it. Its condition is rather poor, and the abdomen is missing. It has completely yellow legs and a yellow apex to scutellum ; this condition is perhaps due to the age of the specimen, or it may have been rather teneral. In a long series of *detracta* from various localities in the Oriental region that I have examined, no specimen without some darkening on the legs, or with a yellow apex to the scutellum could be found ; nevertheless the holotype of *detracta* possesses all the essential characters of the widely distributed species represented in the series examined, i.e. a long plumose arista, sternopleural setae 2 + 2, and a well developed upper anterior mesopleural setula. I consider the specimens from Nepal to be conspecific with the holotype of *detracta*, which may be separated from other species of *Hylemya* by the following characters : only one pair of *prst acr* setae, and 2–3 pairs of *post acr* ;



FIGS. 35–43. *Hylemya* spp. Figs. 35–37. *H. probilis* sp. n. (holotype) : 35, aedeagus ; 36, 5th sternite ; 37, arista. Figs. 38–40. *H. strenua* R.D. (= *strigosa* F.) (England) : 38, aedeagus ; 39, 5th sternite ; 40, arista. Figs. 41–42. *H. detracta* (Walker) (Nepal) : 41, aedeagus ; 42, arista. Fig. 43, *H. variabilis* Stein, arista.

mesonotum and abdomen more shining, especially the dark pattern ; arista with longer rays ; legs generally mainly yellow, including coxae and trochanters, but not tarsi ; fore femur often with a dark dorsal streak, and mid and hind femora with a dark dorsal apical streak or band ; 5th sternite generally with yellow apices to lobes. The genitalia of the Nepal male has long hairs laterally on surstyli, and in profile, some long hairs on anterior margin. The specimens from Darjiling and Mussoorie, India, determined by Stein (1918 : 178) as *Hylemya nigrimana* (Meigen) and *strigosa* (Fabricius) almost certainly refer to *detracta*.

NEPAL : 2 mls S.E. Sikha, 7–8,000 ft., 1 ♂, 1 ♀, 22.v.1954 (*J. Quinlan*) ; Taplejung District, damp evergreen oak forest above Sangu, c. 8,500 ft., 1 ♀, 2–26.xi.1961 (*R. L. Coe*).



FIGS. 44–46. *Hylemya detracta* (Walker) : 44, ♂ hypopygium, caudal view ; 45, hypopygium, profile ; 46, 5th sternite.

LASIOMMA Stein

Lasiomma Stein, 1916, *Arch. Naturgesch.* [1915] A, **81** : 44 (footnote), 183 (as subgenus of *Chortophila* Macq.).

Type-species : *Lasiops ctenocnema* Kowarz, 1880, designated by Séguy, 1937, *Genera Insect.* **205** : 123 (=*Aricia eriophthalma* Zetterstedt, 1860).

According to Collin (1939 : 146), *ctenocnema* Kow. and *roederi* Kow. are the same species ; Ringdahl (1933 : 32) has synonymised *roederi* with *eriophthalma* Zett. It should be noted that Collin's *eriophthalma* Zett. (sensu Kowarz) is another species, probably *anthomyinum* Rondani. The termination must be changed to *eriophthalmum* as *Lasiomma* is neuter.

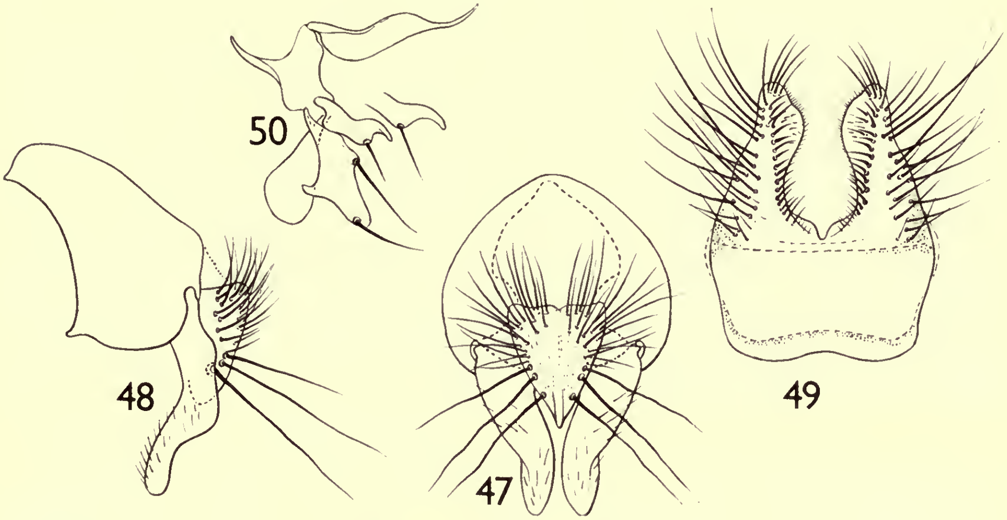
Lasiomma eriophthalmum (Zetterstedt)

(Text-figs. 47–50)

Aricia eriophthalma Zetterstedt, 1860, *Dipt. Scand.* **14** : 6236.

The Nepal specimens agree in essential details, including genitalia, with European specimens. They differ in having the eyes much less densely haired, with the hairs shorter, the narrow pale presutural median vittae on mesonotum more distinct, and the abdominal median vitta slightly wider. The variation in eye-hair length in other species in different parts of their range has also been observed, and it seems inadvisable to create any formal status for this variation in *L. eriophthalmum*.

NEPAL: Taplejung District, above Sangu, leaves of shrubs on sunny ridge, c. 7,500 ft., 10 ♂, 14.i.1962 (*R. L. Coe*).



FIGS. 47–50. *Lasiomma eriophthalmum* (Zett.) (Nepal): 47, ♂ hypopygium, caudal view; 48, hypopygium, profile; 49, 5th sternite; 50, aedeagus.

PAREGLE Schnabl

Paregle Schnabl, 1911, *Dt. ent. Z.* **1911** : 71 (as subgenus of *Hylemya* R.D.).

Type-species: *Musca radicum* Linnaeus, 1758, by designation of Huckett, 1924 : 39.

Paregle cinerella (Fallén)

Musca cinerella Fallén, 1825, *Mon. Muscidum Sveciae* [Pars 8] : 77.
Hylemyia (*Paregle*) *cinerella* (Fallén); Schnabl, 1911, *Dt. ent. Z.* **1911** : 71.

As pointed out by Huckett (1924 : 39), *P. cinerella* does not readily conform to the concept of *Paregle* as suggested by the type-species; the different hind tibial chaetotaxy (2 : 2 dorsal setae in *cinerella*, and about 3 : 6 in *radicum*), and the different structure of the distiphallus in the male, do not imply very close affinity. Nevertheless *cinerella* is probably more closely related to *Paregle radicum* than to any other species.

P. cinerella is a widely distributed species, having been recorded from the whole of the northern hemisphere.

NEPAL: Baitadi, Tinkar Khola, 13,000 ft., 7 ♂, 5 ♀, 3.vii.1953 (*J. B. Tyson*); Siklis, 7,000 ft., 1 ♂, 22.iv.1954 (*J. Quinlan*); Bakhri Kharka, 5,500 ft., 1 ♂, 24.iv.1954 (*J. Quinlan*).

PEGOHYLEMYIA Schnabl

Pegohylemyia Schnabl, 1911, *Dt. ent. Z.* **1911** : 75 (as subgenus of *Hylemyia*).

Type-species: *Musca cinerea* Fallén, 1824, by designation of Huckett, 1965*b* : 852.

The name *Pegohylemyia* was first published (Schnabl, 1911 : 75) on January 2nd, 1911. Three species were included, one of which was *cinerea* Fall., but no description of the characters of *Pegohylemyia* was given. According to the International Code, Art. 12 and 16, the name *Pegohylemyia* is valid from this date. The name was again published in 1911 (Schnabl & Dziedzicki, 1911 : 98); the exact date is uncertain, but the paper was not communicated to the Academy until 12th December, 1910, and therefore is unlikely to have been published before 2nd January, 1911. Four additional species were added (including *gnava* Meigen) to the original three. Collin (1931 : 87) stated that " *gnava* Bouché (sic) may be taken as typical " with reference to *Pegohylemyia*. According to Art. 69 (a) (iv) this cannot be accepted as a valid type-species designation. It is unfortunate that *Musca cinerea* Fall. appears to have been misidentified by several of the earlier authors; for the time being, I accept Ringdahl's interpretation of the species.

KEY TO THE NEPALESE SPECIES OF *PEGOHYLEMYIA* (MALES)

1 Larger species, about 4 mm.; about 12 pairs of frontal setae and hairs of unequal strength; *acr* setae irregularly quadriserial, mainly hair-like; gena about 0·23 times eye-height; wing base bright yellow . . . . . . **quinlani** sp. n.

– Smaller species, about 3 mm.; at most about 8 pairs of frontal setae; *acr* setae biserial; gena about 0·17 times eye-height . . . . . . **nupera** sp. n.

***Pegohylemyia quinlani* sp. n.**

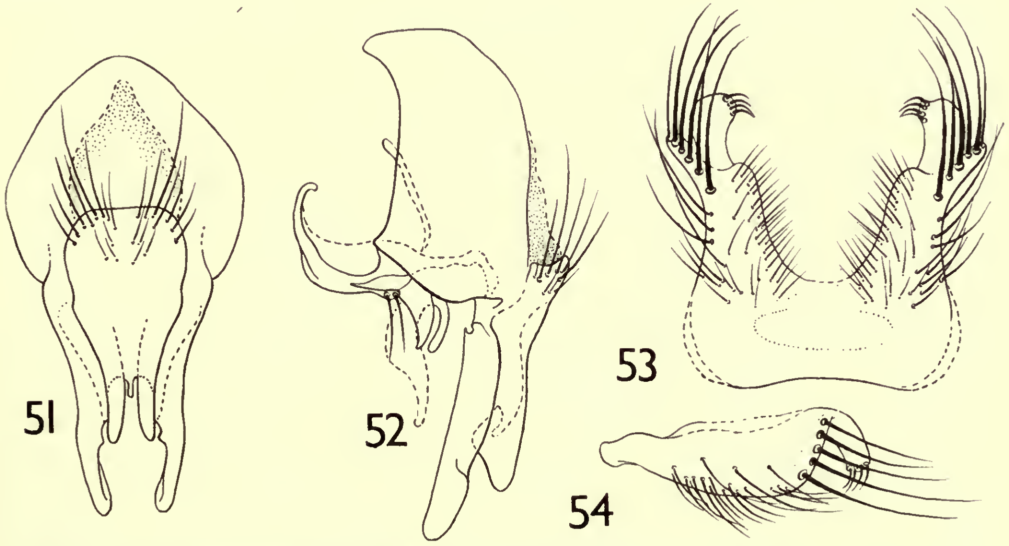
(Text-figs. 51–54)

♂ *Head*: eye-margins on frons nearly touching, at narrowest part separated by less than diameter of anterior ocellus. Interfrontal area, parafrontals, parafacials and genae orange-yellow in ground colour, with yellow pollen, only darkened brownish on interfrontal area in front of ocellar triangle, and on genae posteriorly. Face yellowish in ground colour, with light brownish yellow pollen. Frontal setae about 12 pairs, 5–6 of which are stronger, these alternating with the remaining ones which are finer and more hair-like. A distinct pair of proclinate cruciate interfrontal setulae present. Antennae black, third segment about one and two-thirds (1·7) times length of second segment, apex reaching level of epistome. Arista pubescent, longest hairs fully as long as diameter of the slightly swollen base. Parafrontals at level of lunule as wide as width of third antennal segment, parafacials narrowing slightly towards level of lower margin of eye. Gena at narrowest part about one quarter of eye-height (0·23), setae on lower part of genae multiserial. Epistome in profile not projecting, behind level of frons at lunule. Occiput black, with dark grey pollen, lower half swollen. Upper postocular setulae long and fine, length maintained laterally, and some fine black setulae on upper part of occiput. Vertical, postvertical and ocellar setae not differentiated from the postocular setulae. Palpi black, slender, not swollen at apex. Haustellum rather short, the lightly pollinose brownish mentum slightly shorter than palpi. Eyes appearing bare, but under high magnification with very short sparse hairs, only visible in certain lights. *Thorax*: black in ground colour though pleurae and scutellum rather translucent brownish in parts, with light greyish pollen. Viewed from in front there are no apparent vittae; viewed from behind with a faint suggestion of a pair of lighter pollinose vittae along the *dc* setae. One or two pairs of developed *prst acr* anteriorly, the strongest of which is about three-quarters as long as the first *prst dc*; distance between *prst acr* rows equal to distance between *acr* and *dc* rows; remaining *acr* represented by fine bi- to quadriserial setulose hairs, hardly discernible from the accessory hairs of mesonotum, only one strong pair immediately in front of scutellum. *pra* seta equal in length to posterior *npl* seta, and much closer to suture than to *sa* seta. No developed upper anterior mesopleural setula. Two unequal prostigmatal setae, with about 6–9 associated hairs, two propleural setae, *stpl* 1 + 2, lower posterior seta nearly as long as upper. Scutellum blackish brown in ground colour, with greyish pollen, median basal part of disc bare, ventral surface at apex with some fine pale hairs. *Wings*: membrane clear pale yellowish orange at base, otherwise almost clear, veins pale brownish. Costal spine absent. Costa bare on ventral surface. *m-m* nearly straight and rather upright. Last section of M_{1+2} about 1·4 times length of preceding section. Calyptrae yellowish orange with pale yellow fringe; lower calypter slightly smaller than upper. *Legs*: brownish black, the tibiae, especially mid and hind pair, translucent yellowish brown medially; tarsi brownish black. Fore tibia with a distinct median *p* or *pv* seta. Mid femur with a row of long *pv* setae in basal half, becoming shorter apically. Mid tibia with 2 subequal *pd* setae, a shorter *ad* at level of distal *pd*, and 2 much shorter *pv* setae. Hind femur with complete rows of long *av* and *pv* setae, the setae of the *pv* row slightly shorter, especially at base. Hind tibia with 4 *ad*, median pair the longest, and 3 *pd*, basal seta short, apical one longest; 2 *av* setae in apical half, 2–3 fine *pv* hairs in basal half; *pv* apical seta absent. *Abdomen*: very short, not quite as wide as thorax, dorsoventrally compressed, and only slightly swollen at apex. Black in ground colour, with greyish pollen; a narrow brownish black parallel-sided median vitta (about as wide as hind tibia) on all segments.

Body-length 4 mm., wing-length 5 mm.

♀ unknown.

Holotype ♂. NEPAL: 2 mls S.W. of Rambrong, 8,000 ft., 26.iv.1954 (*J. Quinlan*).



FIGS. 51–54. *Pegohylemyia quinlani* sp. n. (holotype): 51, ♂ hypopygium, caudal view; 52, hypopygium, profile; 53, 5th sternite; 54, 5th sternite, profile.

Paratype. INDIA: Darjiling, 1 ♂, 20–24.v.1917 (*E. Brunetti*).

P. quinlani appears to have some affinity with the European *P. seneciella* (Meade), especially in the form of the genitalia. This latter species has been figured by Ringdahl (1959 : 322) under the name *gnava* (Mg.).

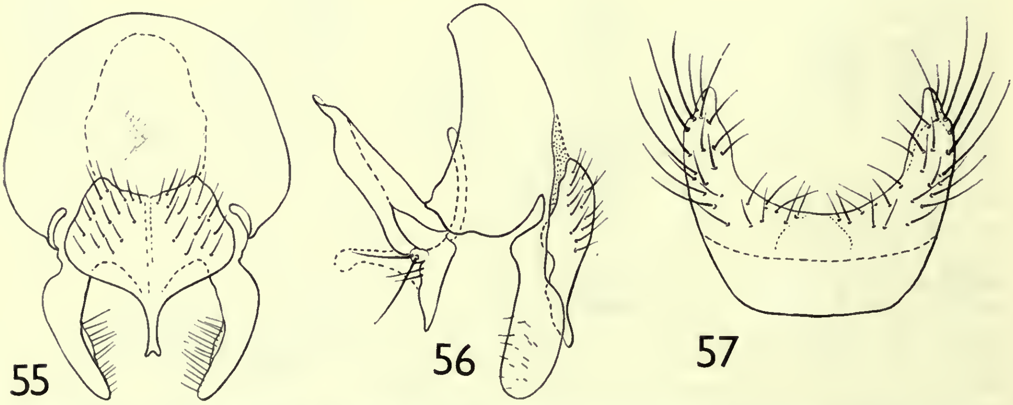
Pegohylemyia nupera **sp. n.**

(Text-figs. 55–57)

♂ *Head*: interfrontalia, parafrontals, parafacials and genae orange-yellow in ground colour, with shining whitish pollen when viewed from above (except interfrontalia). Occiput black with dark grey pollen. Upper part of interfrontalia rather darker brownish. Eye-margins at narrowest part on frons separated by diameter of anterior ocellus. Parafrontals at level of lunule rather projecting, about as wide as width of third antennal segment, this width maintained on parafacials towards epistome, which is at same level as frons at lunule. Gena the same width as a parafacial, about one-sixth of eye-height (0·17). Antennae black, third segment about 1·5 times length of second, but almost reaching epistome. Arista swollen at base, pubescent, the hairs not longer than basal diameter. Palpi dark brown or black, slender. Mentum of haustellum brown or black, length about three-quarters length of fore tibia. Frontal setae about 7–8 pairs; a pair of small cruciate interfrontal setulae above uppermost frontal seta. Upper postocular setulae rather long, apparently more than uniserial, the length well maintained laterally, where the setulae curve forwards. *Thorax*: black, with dark grey pollen. No distinct vittae on mesonotum in holotype, but the *acr* area is somewhat darker when viewed from behind. *acr* setae fine, biserial, one pair of longer fine *prst acr* (equal to first *prst dc*), which are separated from each other by the same distance between them and the *prst dc*; *post acr* very fine and short, hardly discernible from accessory mesonotal hairs. *pra* seta distinct (partly broken off in holotype) and at least as robust as posterior *npl* seta, length not ascertainable. Scutellum concolorous with thorax. *Legs*: in very bad condition. Black, mid tibia with one *ad* seta, and one (probably two) *pd* setae. *Wings*: costal spine absent. Costa bare ventrally. Membrane almost clear, veins pale brownish. Calyptrae pale whitish yellow. *Abdomen*: in very bad condition. Dorsoventrally compressed, hardly swollen at apex.

Body-length about 3 mm.

♀ unknown.



FIGS. 55–57. *Pegohylemyia nupera* sp. n. (holotype): 55, ♂ hypopygium, caudal view; 56, hypopygium, profile; 57, 5th sternite.

Holotype ♂. NEPAL: Baitadi, Tinkar Khola, 13,000 ft., 3.vii.1953 (*J. B. Tyson*).

P. nupera appears to be related to the recently described Nearctic *P. vallaris* Huckett, 1965, especially in the form of the 5th sternite, though the apex of the cercal plate in *vallaris* is not produced into a point. *P. vallaris* is also a very small species. In spite of the rather poor condition of the holotype, it should be recognisable through the structure of the genitalia.

PHORBIA Robineau-Desvoidy

Phorbia Robineau-Desvoidy, 1830, *Mém. prés. div. Sav. Acad. Sci. Inst. Fr.* **2** : 559.

Type-species : *Phorbia musca* Robineau-Desvoidy, 1830, designated by Coquillett, 1910, *Proc. U.S. natn. Mus.* **37** : 589.

For discussion of the use of the name *Phorbia*, see Huckett (1947). In this paper I follow the generally accepted application of the name to the group of species with a swollen postabdomen in the male, and a laterally compressed, sclerotized ovipositor in the female. Two new species are described from Nepal, which can only be separated at present by the structure of the male genitalia.

Phorbia tysoni sp. n.

(Text-figs. 58–63)

♂ *Head* : ground colour black, parafacials and parafrontals silvery white pollinose. Eye-margins at narrowest part of frons separated by width of anterior ocellus. Head in profile of usual *Phorbia*-shape. Parafrontals at level of lunule slightly wider than width of third antennal segment, parafacials at narrowest part slightly less wide. Epistome, in profile, slightly behind level of profrons, width of gena about one-fifth (0·19) of eye-height. Antennae black, third segment about one and three-quarters (1·75) length of second, arista short pubescent, with longest hairs not longer than diameter of the slightly swollen base. Haustellum black, mentum slightly shining, but with some pollen, about 3 times as long as wide, rather slender. *Thorax*: black, dark grey pollinose, lighter grey pollen on humeri, a trace of two narrow pale grey pollinose presutural vittae between *acr* and *dc* rows. *acr* setae short and fine, biserial, *prst acr* hardly one-third length of first *prst dc* setae (in some examples even shorter), and rows close together, distance between *acr* and *dc* rows at least 4 times the distance between *acr* rows ; one longer pair of prescutellar *acr* setae. *pra* seta long, about 1·25 times length of posterior *npl* seta, and placed very close to suture, at least 4 times as distant from *sa* as from suture. *stpl* 1 + 2, lower posterior seta nearly as long as upper. Scutellum black, almost bare on disc, with only 2–4 fine setulae laterally inside level of strong marginal setae ; apex ventrally with a few very fine short pale hairs, almost imperceptible. *Wings* : membrane dark brown at base, and brownish suffused along anterior margin, apex and hind margin almost clear. Veins brown. Costa without setulae on ventral surface, except 2–3 in basal section (not discernible in dried specimens). Costal spine very short and hardly distinct, not much longer than costal setulae. *m-m* almost straight, not very oblique. Last section of M_{1+2} about one and a half (1·6) times length of preceding section. Calyptrae whitish yellow, with whitish fringe, contrasting with brown wing base, lower calypter very small. Halteres yellow. *Legs* : black. Mid tibia apparently without an *av* seta, though one may be present in well preserved specimens (females belonging to this or the next species possess a well developed *av* on the mid tibia) ; one *ad*, 2 *pd*. Hind femur with *av* and *pv* setae. Hind tibia with 3–4 *ad*, 3–4 *pd*, and 3 rather long *av* setae ; *pv* apical seta absent. *Abdomen* : black, with dark grey pollen. In profile strongly swollen apically, somewhat compressed dorsoventrally at base, but not completely flattened. Lobes of 5th sternite very distinct, projecting slightly beyond apex of T9 in profile, lower margins (i.e. inner) with dense inwardly curved comb-like short setulae. ♂ *genitalia* : this species is remarkable in having asymmetrical genitalia, the cercal plate being produced into a lobe-like swelling on the left side only, and the surstyli also being slightly asymmetrical. The right praegonite is much larger than the left. This condition is present in three of the paratypes, as well as the holotype, and is therefore very unlikely to be due to parasitism.

Body-length 4 mm., wing-length 3·75 mm.

♀ unknown.

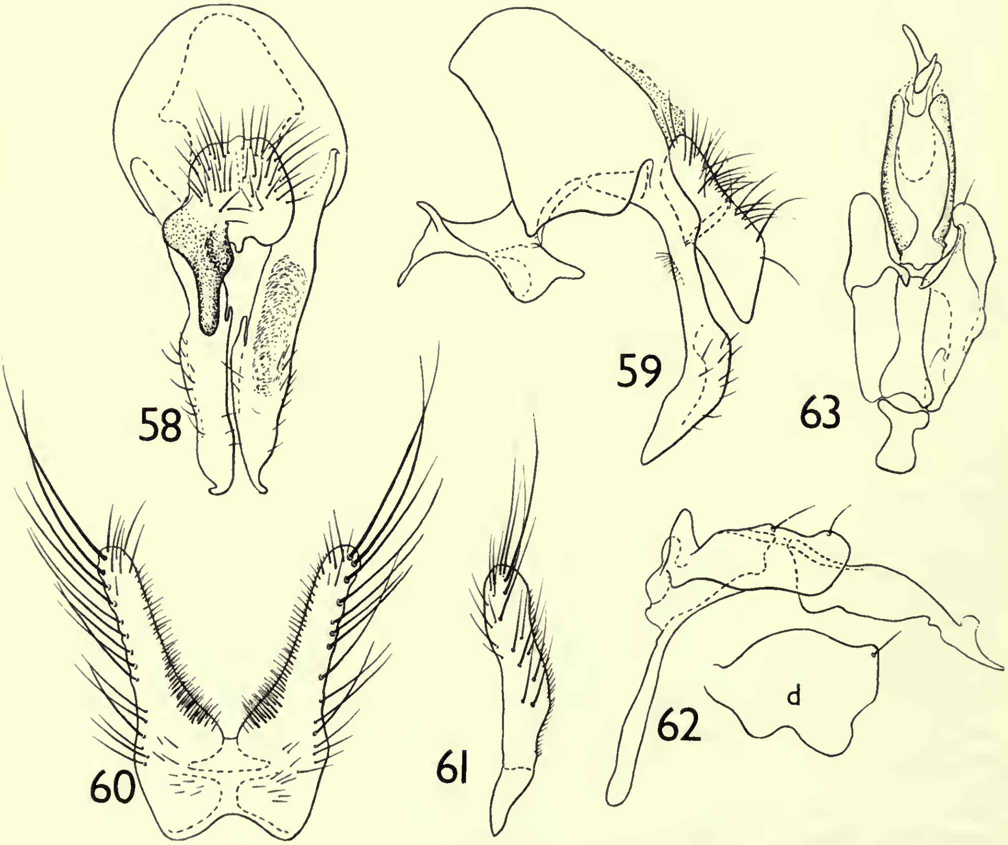
Holotype ♂. NEPAL : Baitadi, Tinkar Khola, 3.vii.1953 (*J. B. Tyson*).

Paratypes. 4 ♂, same data as holotype (one paratype mounted on a slide).

***Phorbia morula* sp. n.**

(Text-figs. 64–69)

♂ : only differs from *P. tysoni* in the form of the genitalia : cercal plate with the apical lobes the same length, but the left side produced posteriorly (when viewed in profile) ; in caudal view



FIGS. 58–63. *Phorbia tysoni* sp. n. (holotype) : 58, ♂ hypopygium, caudal view ; 59, hypopygium, profile ; 60, 5th sternite ; 61, 5th sternite, profile ; 62, aedeagus, lateral view, d, right praegonite ; 63, aedeagus, ventral view.

the two sides are only very slightly asymmetrical. Aedeagus with the praegonites nearly symmetrical, indentation on dorsal surface of praegonite between setae larger. 5th sternite with the lobes shorter in relation to median length of basal part. The paratype from the same locality as the holotype has a slightly differently shaped 5th sternite to the holotype, but the genitalia are otherwise identical.

♀ unknown.

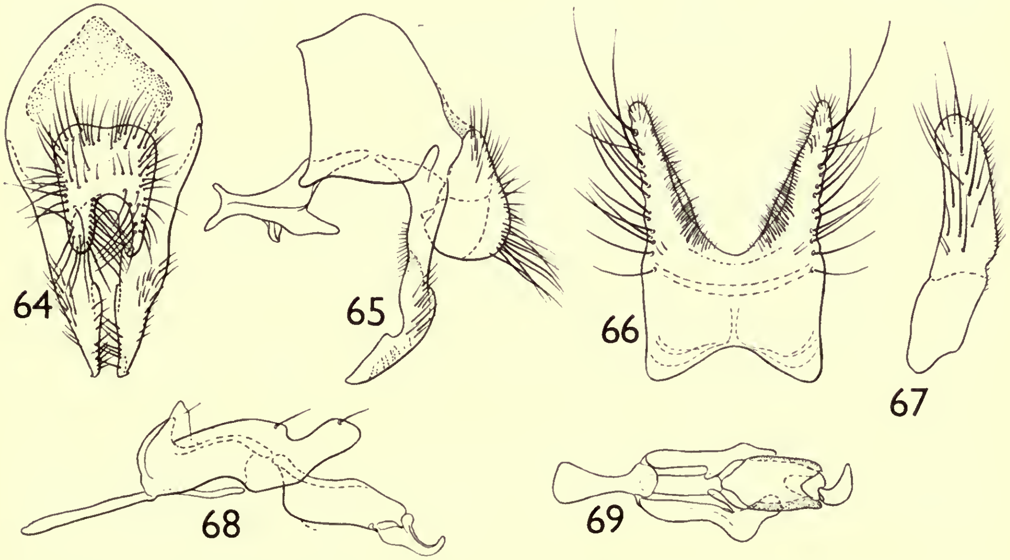
Holotype ♂. NEPAL: Baitadi, Tinkar Khola, 3.vii.1953 (*J. B. Tyson*).

Paratypes. 1 ♂, same data as holotype [in British Museum (Nat. Hist.)]; 1 ♂, Mingoo Ersttrip der Hilary-Expedition,* Hang oberhalb beweidete Zwergstrauchheide, rund 4,900 m. (*H. Janetschek*) [in Deutsches Entomologisches Institut, Berlin].

Phorbia sp. ♀

Nine females of a *Phorbia* species were collected at the same time and place as the two species described above. No morphological characters can be found to separate them into two species, or to associate them with either one or the other of the above species.

NEPAL: Baitadi, Tinkar Khola, 9 ♀, 3.vii.1953 (*J. B. Tyson*).



FIGS. 64–69. *Phorbia morula* sp. n. (holotype): 64, ♂ hypopygium, caudal view; 65, hypopygium, profile; 66, 5th sternite; 67, 5th sternite, profile; 68, aedeagus, lateral view; 69, aedeagus, ventral view.

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* Probably Mingbo Airstrip of the Hillary Expedition.

NUPEDIA Karl

Nudaria Karl, 1928, *Die Tierwelt Deutschlands* **13** Teil, Diptera III Muscidae : 171 (as subgenus of *Chortophila* Macq.) [preocc. Haworth, 1809, Lepidoptera].
Nupedia Karl, 1930, *Zool. Anz.* **86** : 174 [n. n. for *Nudaria* Karl].

Type-species of *Nudaria* (and hence of *Nupedia*) : *Anthomyia dissecta* Meigen, 1826, by original designation.

The type-species has been shown (Ackland, 1965) to be misidentified, and an application to change the type-species has been made to the International Commission on Zoological Nomenclature (1965, *Bull. zool. Nomencl.* **22** : 110). In this paper the previously accepted usage of *Nupedia* is followed.

Nupedia aestiva (Meigen) **comb. nov.**

Anthomyia aestiva Meigen, 1826, *Syst. Beschr.* **5** : 169.
Egle aestiva (Meigen) ; Schnabl and Dziedzicki, 1911, *Nova Acta Acad. Caesar. Leop. Carol.* **95** : 105.
Hylemyia (*Paregle*) *aestiva* (Meigen) ; Séguy, 1923, *Faune de France* **6** Diptéres Anthomyides : 105.

N. aestiva has previously been placed in *Paregle* Schnabl, 1911, no doubt because it possesses a projecting epistome. Its true affinities (as pointed out by Collin, 1931 : 88) are with *Nupedia infirma* (Meigen, 1826) (=*Nupedia dissecta* auctt. not Meigen), see Ackland (1965). *Nupedia* may be characterized by the following combination of characters : praegonites and postgonites well developed, but of simple form, and both with setae, distiphallus large, robust and sclerotized, apically enlarged, and with teeth or sharp lateroventral projections, 5th sternite more or less heart-shaped, and with numerous short strong setulae on posterior part (along inner margins of lobes) ; there also appear to be two *ad* and two *pd* setae on the hind tibia ; the costa may be hairy or bare ventrally, and the surstyli simple or forked at apices. Most of these characters are shared by *Pegoplata* Schnabl, 1911, and the two groups are probably closely related ; *Pegoplata* species have however, rather different surstyli, and the 6th tergite is exposed and bears several setae. *Nupedia aestiva* is the only species of *Nupedia* known to me with a projecting epistome and an *av* seta on the mid tibia.

N. aestiva is a common and widely spread species in Europe, and has also been recorded from North America.

Nepal : Mingoo Ersttrip der Hilary-Expedition,* Hang oberhalb beweidete Zwergstrauchheide, rund 4,900 m., 2 ♂, 1 ♀, 28.v.1961 (*H. Janetschek*) ; Zwergrhododendrenbestände beim Basislager bei Pangpoche, rund 3,900 m., Kätscherfang, 1 ♂, 12.v.1961 (*H. Janetschek*) ; Kätscherfang im Rodoretum beim Basislager bei Pangpoche, rund 3,900 m., 1 ♂, 26.v.1961 (*H. Janetschek*) [in Deutsches Entomologisches Institut, Berlin].

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* Probably Mingbo Airstrip of the Hillary Expedition.

PSEUDOMYOPINA Ringdahl

Pseudomyopina Ringdahl, 1933, *Ent. Tidskr.* **54** : 31 (as subgenus of *Hylemya* R.D.).

Type-species : *Aricia moriens* Zetterstedt, 1845, by monotypy.

Aricia moriens was described from two specimens taken in Sweden (Jämtland, Mullfjället) and both sexes from Norway (Kälahög). The subgenus *Pseudomyopina* was erected for it by Ringdahl in order to separate it from other species with a wide frons in the male (*Myopina* R.D., 1830) from which it differed in a number of characters, especially in having a rather wide, dorsoventrally compressed abdomen, not laterally compressed as in *Myopina myopina* (Fallén).

Among the material from Nepal submitted by Dr. Morge was an undescribed species which appeared to agree quite closely with the essential characters given by Ringdahl for *Pseudomyopina*. Prof. Hennig has also sent me a further closely related undescribed species from Tadzhikistan, which he has kindly allowed me to describe in this paper.

In order to make a detailed examination of the type-species of *Pseudomyopina*, I wrote to Mr. H. Andersson of the Zoological Institute, Lund, who very kindly sent me a male syntype of *Aricia moriens* from Kälahög. The genitalia of this syntype are figured in Text-figs. 70–73. Huckett (1965, figs. 58, 135, 229) has given figures of the genitalia of a North American species determined as *moriens* Zett., but which is not the same species as the Norwegian syntype. The Kälahög syntype has genitalia which are closer to *defector* Huckett, described and figured in the same paper. Because of the possibility that the other syntypes of *moriens* from Sweden may not be conspecific with the Kälahög syntype (Mr. Andersson, *in litt.* mentions that there is a male and a female syntype from Mullfjället in the collection) I am not designating the Kälahög syntype as lectotype.

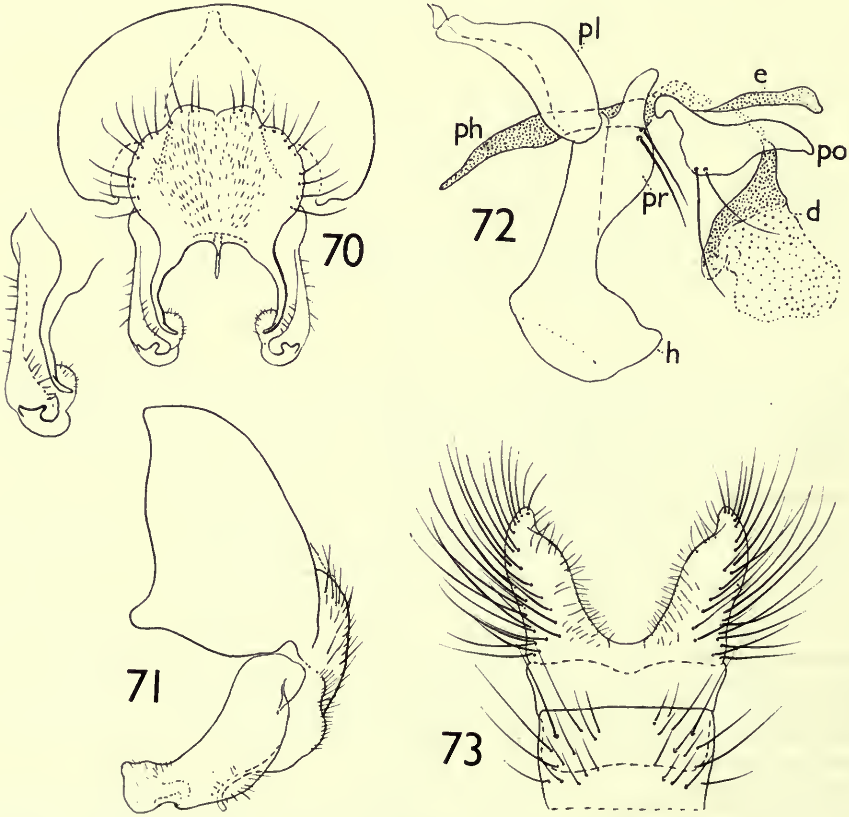
The two new species described below have the following characters in common with *A. moriens* :

Frons in male wide, at least 0·37 times head-width (*moriens*) to 0·47 (*pamirensis*) ; one pair of strong cruciate interfrontal setae present, and frontal setae long and robust ; epistome projecting in front of level of vibrissal setae ; genae wide, from 0·27 times eye-height (*moriens*) to 0·8 (*fumidorsis*) ; arista bare, rather swollen at base ; palpi long and slender ; *pra* seta long ; *stpl* setae 1 + 2 ; 1–2 developed prostigmatal setae ; *acr* setae represented by fine setulae or hairs ; scutellum with fine pale hairs ventrally at apex ; costal spine strong, at least as long as cross-vein *r-m*, sometimes longer ; lower calypter small ; cross-vein *m-m* straight and rather upright ; fore tibia with at least 2 *ad* and 2 *pd* setae (fine in *pamirensis*) ; mid and hind femora with rows of *av* and *pv* setae ; mid tibia with at least 2 *ad* and 2 *pd* setae ; hind tibia with at least 5 *av* setae, and *pv* apical spur absent ; claws and pulvilli small ; abdomen strongly dorsoventrally compressed, rather flat and wide. Male genitalia : hypandrium large and well developed, epandrium large and wide ; cercal plate wide, with the apical corners slightly produced (*pamirensis* and *fumidorsis*) or with long slender processes (*moriens*) ; surstyli incised at apices ; praegonites reduced, with 2 short setae, postgonites simple, swollen at base, with 2 fine setae ; distiphallus simple, mainly membranous, only the basal part sclerotized ; 4th sternite nearly as wide as 5th sternite.

Of the characters which are present in *moriens*, and which might be considered to be of generic importance, but which are not included above, the following should be mentioned. Two anteroventral setae are present on the mid tibia in *moriens*, and also in *fumidorsis* but are absent in *pamirensis.* The presence or absence of this character in two such obviously monophyletic species as *fumidorsis* and *pamirensis* indicates that it is of little generic importance. The ventral surface of the costa of the wing in *moriens* has a few hairs, especially in the basal part, but they are close to the anteroventral setulae in the apical part, and difficult to see ; in *fumidorsis* and *pamirensis* the ventral surface of the costa is virtually bare, although some longer, more erect hairs are discernible very close to the anteroventral setulae. The two species would, however, certainly be normally considered as having the costa bare ventrally. The character of ventral costal hairs is unfortunately not as clear cut as it might at first appear, as numerous different kinds of hairing can be observed, and the effect may be sometimes due to a displacement of anterior hairs, rather than the presence of extra true ventral hairs.

A. moriens has a developed upper anterior mesopleural setula, which is absent in the other two species.

Although it is not possible at the present time to indicate which are the apomorphic characters by which *Pseudomyopina* might differ from other genera, the following



Figs. 70–73. *Pseudomyopina moriens* (Zett.) (syntype) : 70, ♂ hypopygium, caudal view ; 71, hypopygium, profile ; 72, aedeagus ; 73, 4th and 5th sternite.

may be useful in separating the species from closely or superficially related genera : *Myopina* has a developed praegonite and a very complicated sclerotized distiphallus, and the 6th abdominal tergite bears numerous setulae ; in addition the overall structure of the abdomen is quite different, and the epistome is not projecting. *Fucellia* R.D. has no setae on the postgonite, the distiphallus is more sclerotized, and the costa ventrally has fine hairs basally, but rather widely spaced strong spicules in apical half. *Monochrotogaster* Ringdahl, according to Hennig (1966), has a slender bifurcate cercal plate, no setae on the postgonite, the distiphallus is short and almost fully membranous ; in addition the pulvilli are very large.

KEY TO OLD WORLD SPECIES OF *PSEUDOMYOPINA* (MALES)

1 Genae narrower, at most 0·3 times height of eye ; costa of wing with some fine hairs on ventral surface, more distinct in basal half ; a developed upper anterior mesopleural setula present ; thorax with yellowish or brownish pollen, mesopleuron darker brownish . . . . ***moriens*** (Zett.)

– Genae wider, at least 0·6 times height of eye ; costa of wing bare on ventral surface ; no developed upper anterior mesopleural setula ; thorax with greyish green or greyish pollen, at most some brownish pollen on mesonotum 2

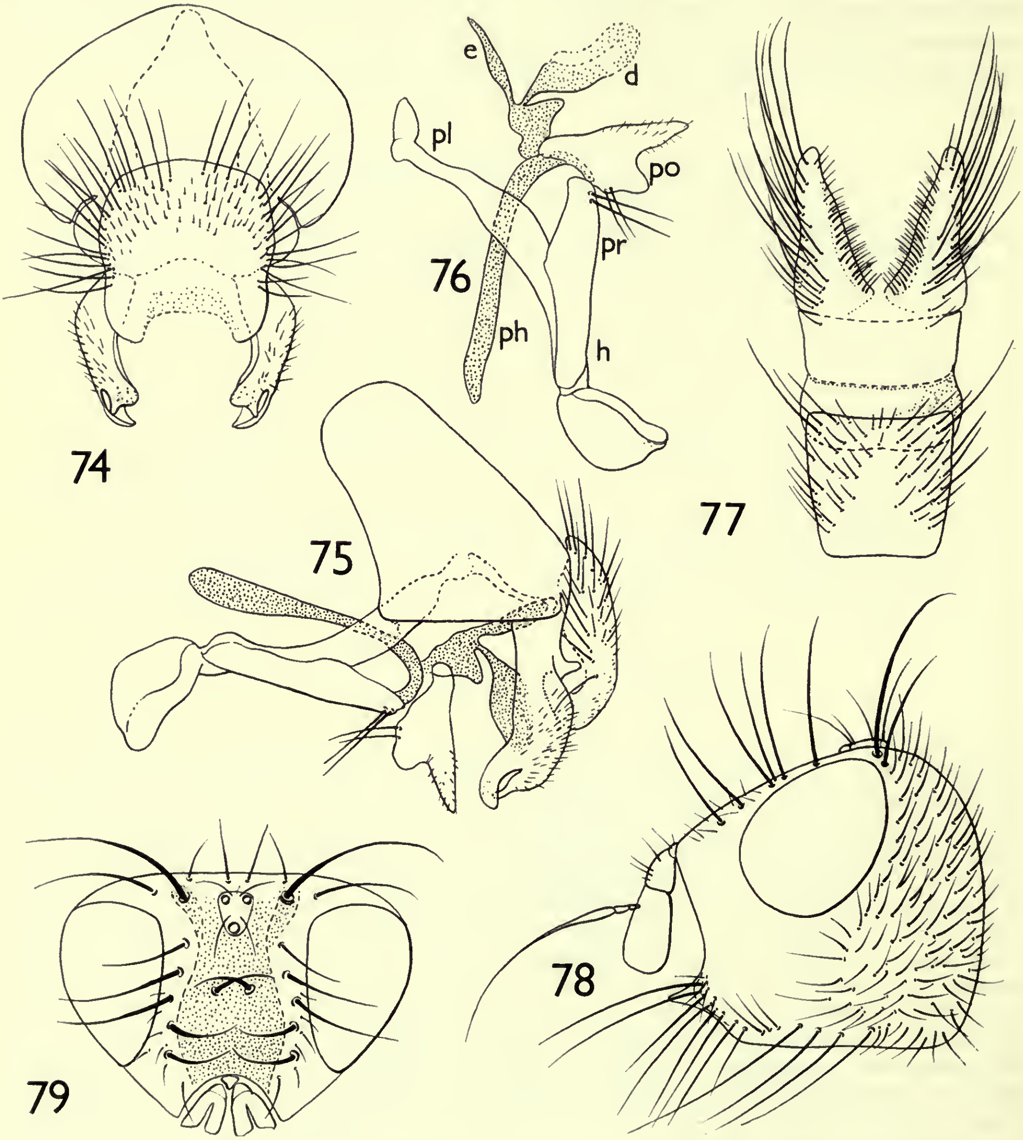
2 *pra* seta as long as posterior notopleural seta ; costal spine at least 1·5 times length of cross-vein *r-m* ; anterior costal setulae about twice as long as diameter of costa ; mesonotum with extensive lateral brownish pollen, contrasting with a greyish pollinose median vitta ; mid tibia with 2 *av* setae, hind tibia with about 5 strong *av* setae . . . . (Nepal) ***fumidorsis*** sp. n.

– *pra* seta slightly shorter than posterior notopleural seta ; costal spine only as long as length of *r-m* ; anterior costal setulae only about as long as diameter of costa ; mesonotum with only greyish green or bluish pollen ; mid tibia without *av* setae, hind tibia with only 3 strong *av* setae . . (Tadzhikistan) ***pamirensis*** sp. n.

Pseudomyopina fumidorsis sp. n.

(Text-figs. 74–79)

♂ *Head* : black in ground colour, with greenish grey and brownish pollen. Eyes widely separated, frons wide, at vertex 0·44 times head-width. Interfrontalia matt black, with brownish pollen when viewed from in front, constricted in front of anterior ocellus, where it is about twice as wide as a parafrontal at this level, widening out in anterior half of frons ; one pair of strong cruciate interfrontal setae, and numerous short hairs across anterior part of interfrontalia. Parafrontal greyish pollinose, with a trace of brownish pollen towards inner margin ; 5–6 strong frontal setae, and some short fine hairs outside their bases. Parafacial at lunule wide, about 1·3 times width of third antennal segment, width maintained ventrally, gena very wide (hence eyes small) about 0·8 times height of an eye. Epistome strongly projecting, the margin in profile reaches beyond level of vibrissal setae ; about 6 other strong setae below vibrissae on anterior lateral margins of mouth opening, which is obliquely cut off when viewed in profile. Antennae black, third segment hardly twice as long as second, arista bare, basal segments rather long, third segment rather distinctly swollen at base. Mentum of haustellum black with greyish pollen, matt, length difficult to determine in holotype, but probably rather long ; palpi black, long and slender. Two pairs of vertical setae, inner pair very robust and long, outer pair equal in length to frontal setae. Occiput swollen and rounded, greyish green pollinose, with numerous short, stiff black setulae on upper part, those on lower part more hair-like. *Thorax* : black in ground colour, with greyish green pollen, and patches of brownish pollen, especially on dorsum. Mesonotum, viewed from in front, with a paler greyish median vitta presuturally, which is about half as wide as distance between *prst dc* setae ; the rest of mesonotum, apart from humeri, brownish pollinose. Viewed from the side this brownish pollen tends to form a darker vitta along the lines of the *dc* setae, but the area immediately in front of scutellum, and this itself, clear greenish or bluish grey pollinose. *acr* setae represented by irregularly bi- to triserial fine erect hairs, indistinguishable from accessory mesonotal hairs, only slightly longer, but not stronger in front of scutellum ; *prst acr* hairs separated by a bare space, equal to width of *acr* rows, from *dc* setae. *pra* seta long and strong, equal to posterior



FIGS. 74–79. *Pseudomyopina fumidorsis* sp. n. (holotype) : 74, ♂ hypopygium, caudal view ; 75, hypopygium, profile ; 76, aedeagus ; 77, 4th and 5th sternite ; 78, ♂ head, profile ; 79, ♂ head, dorsal view.

npl seta, situated much closer to suture than to *sa* seta. Two long posthumeral setae. Notopleuron bare apart from the two strong seta. Two unequal propleural setae, one strong and one finer prostigmatal seta, with about 7–9 fine associated hairs. No developed upper anterior mesopleural setula. *stpl* setae 1 + 2, lower posterior seta about two-thirds length of upper posterior seta. Scutellum concolorous with posterior part of mesonotum, one pair of strong basal lateral setae, one pair of strong apicals, and one pair of fine preapicals, which are about half as long as, and as distant from each other as the apicals ; lateral setulose hairs uniserial, about 3–4 apical hairs which are rather long ; ventral surface of scutellum with a few fine pale hairs at apex. *Wings* : membrane very faintly greyish tinged, base of wing distinctly yellowish, veins brownish. Anterior costal setulae rather long, those between apices of subcostal vein and R_1 about 1·5–1·75 times diameter of costa. Ventral surface of costa virtually bare, though there is a row of fine, semi-erect hairs very close to the anteroventral row of setulae ; these are probably not true ventral hairs. Costal spine long, about 1·6 times length of *r-m*. Cross-vein *m-m* straight, and rather upright. Last section of M_{1+2} 1·28 times length of preceding section. Calyptrae yellowish, with yellow fringe, concolorous with wing base ; lower calypter narrow, at widest part not wider than diameter of hind tibia. Halteres yellow. *Legs* : black, with thin greyish pollen. Fore tibia with 2 *ad*, 3 *pd* and one *pv* seta ; two strong preapical setae present. Mid femur with almost complete *av* and *pv* rows, the setae of the *pv* row longer, especially at base, and mixed with fine setulose hairs. Mid tibia with 2 *av*, 3 *ad* (basal one shorter), 3–4 *pd*, and about 3 *pv* setae, all rather strong. Hind femur with complete rows of *av* and *pv* setae mixed with setulose hairs. Hind tibia with about 7 *ad*, 6–7 *pd*, 5–6 *av* setae, all strong, and about 7–8 finer unequal *pv* setulae ; *pv* apical spur absent. Claws and pulvilli rather small. *Abdomen* : black in ground colour, with dense greyish pollinosity, slightly bluish or greenish tinged. Dorsoventrally compressed, postabdomen somewhat swollen ; viewed from above elongate-oval, widest at T3 which is 3 times as wide as median length of tergite ; ratio of total length of abdomen to greatest width is 8 : 5. Viewed from behind with a diffused median vitta (about as wide as diameter of hind femur) on T3 and T4 and basal part of T5, hardly distinct on T1 + 2. T6 apparently without any hairs. T7 + 8 pollinose.

Body-length 6·5 mm., wing-length 7 mm.

♀ unknown.

Holotype ♂. NEPAL : Umgebung der Grünen Hütte der Hilary-Expedition 21.v.1961 (*H. Janetschek*) [in Deutsches Entomologisches Institut, Berlin].

***Pseudomyopina pamirensis* sp. n.**

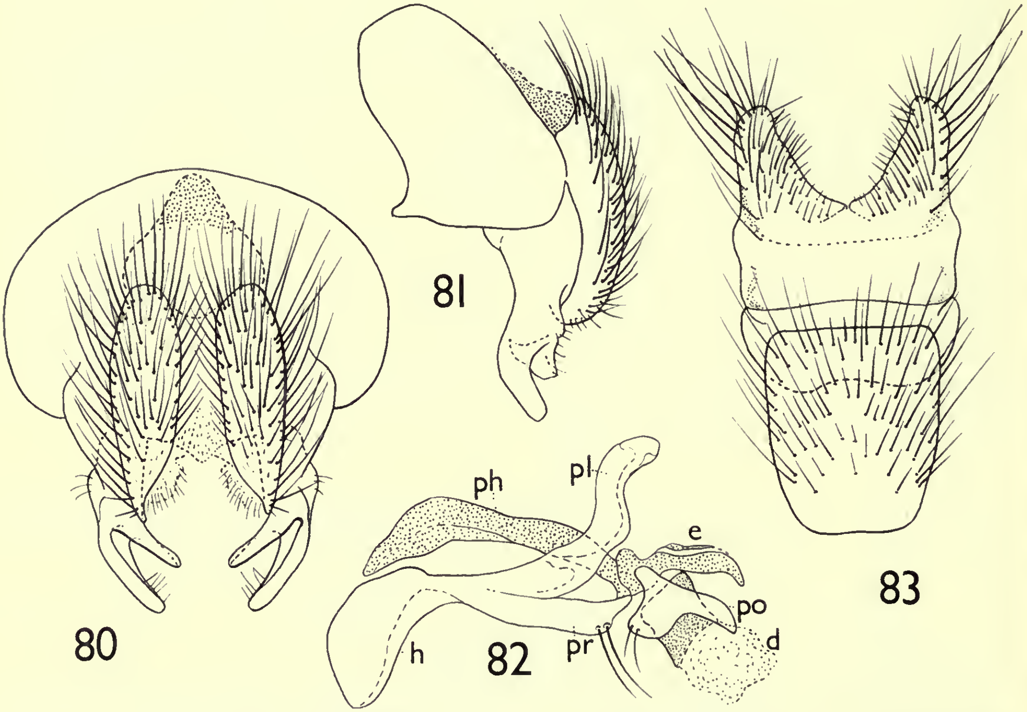
(Text-figs. 80–83)

♂. Very similar in general appearance to the preceding species, so that a detailed description is unnecessary. The main differences are given in the table below.

fumidorsis	*pamirensis*
Costal spine longer, about 1·5 times length of *r-m*.	Costal spine shorter, not longer than length of *r-m*.
Anterior costal setulae longer than diameter of costa.	Anterior costal setulae not longer than diameter of costa.
Mesonotum with extensive brown pollen.	Mesonotum without brown pollen, except around base of prescutellar *dc* seta.
pra seta as long as *post npl*.	*pra* seta slightly shorter than *post npl*.
Fore tibia with 2 strong *ad* and 3 strong *pd* setae.	Fore tibia with 1–2 *ad*, and 1–2 *pd* setae, rather fine.

Hind tibia with 5 strong *av* setae.	Hind tibia with 3 strong and 2 fine *av* setae.
Mid tibia with 2 *av* setae.	Mid tibia without *av* setae.
5–6 pairs of frontal setae.	7–8 pairs of frontal setae.

The male genitalia has the cercal plate divided into two pads, which are more setulose than in *fumidorsis*, and the surstyli are more deeply cleft at their apices. The postgonite is less produced below in *pamirensis* than in *fumidorsis*, and the lobes of the fifth sternite are much shorter. The sixth abdominal tergite in the holotype of *pamirensis* has some fine setulose hairs. ♀ unknown.



Figs. 80–83. *Pseudomyopina pamirensis* sp. n. (paratype) : 80, ♂ hypopygium, caudal view ; 81, hypopygium, profile ; 83, 4th and 5th sternite.

Holotype ♂. Tadzhikistan : E. Pamir, 12 km. from Tschetchsekty, Tzirk Zor, 4,800 m., 25.vii.1962 (*Sychevskaya*).

Paratype. 1 ♂, same data as holotype. [Both in Staatliches Museum für Naturkunde, Stuttgart].

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Commonwealth Institute of Entomology, London

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By G. J. KERRICH

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SYNOPSIS

The classification of the main Encyrtid subfamily Encyrtinae is discussed, and a revised key is given for its division into the three generally recognized tribes.

The tribe Anagyrini (= Ectromini Ashmead) is classified into five subtribes, which are characterized. The genera recognized by the author as belonging to three of these are listed or are indicated by reference to literature.

A dichotomous key is given for separation of the genera of the subtribe Ericydnina in both sexes, and some of the genera are briefly discussed. Systematic revisions are given of the species of *Hungariella* Erdös, *Ericydnus* Walker, *Grandoriella* Domenichini and *Clausenia* Ishii.

In the Aenasiina subtrib. n. only the female sex has been studied. A dichotomous key is given for the separation of the six genera, and systematic revisions are given of the species of five of these, for which sufficient material was available.

The division of the Encyrtidae into three subfamilies, Encyrtinae, Arrenophaginae and Antheminae is generally agreed; but authors have subdivided the largest subfamily, the Encyrtinae, in various ways. This situation has been reviewed by Tachikawa (1963).

Compere has, in various papers, but especially in 1947 and in a rather recent joint communication with Annecke (1960), emphasized the importance of the structure and function of the female gaster in Encyrtid classification. On this basis, the two authors of the latter paper gave a revised key (p. 376) in which Ashmead's tribes of the Encyrtinae were redefined. Tachikawa, in his excellent study of the Japanese Encyrtidae (1963) has accepted this standpoint. Like that Japanese author I give, though in somewhat different form, an expanded version of their key for the purpose of more general generic identification, the nomenclature adopted being that which I have already considered most appropriate (Kerrich, 1964).

ENCYRTINAE

Key to the tribes of the *ENCYRTINAE* Ashmead

1 Styli and paratergites absent. Mandibles apically truncate. Costal cell of hind wing broad . . . . **ENCYRTINI** Ashmead

Styli or paratergites or both present. Mandibles dentate 2

2 Paratergites almost always present: styli in most genera absent. Mandibles slender, generally bidentate, sometimes tridentate with three sharp teeth, but never with two sharp teeth and a truncation: female hypopygium usually boat-shaped and usually enclosing the ovipositor . . . . . . **ANAGYRINI** Hoffer 1954
(=Ectromini Ashmead)

Paratergites absent. Styli always present and distinct, generally movable apart from the plates which bear them. Mandibles never bidentate with equal teeth, generally tridentate, frequently with two sharp teeth and a truncation; female hypopygium very rarely boat-shaped and very rarely enclosing the ovipositor **BOTHRIOTHORACINI** Howard 1895
(=Mirini Ashmead)

Compere & Annecke (1960) defined the terms " styli " and " paratergites ", which are used in the key to tribes. Paratergites are illustrated by Compere (1947, fig. 6) and on Pl. I of the present paper. In the Anagyrini the entire ovipositor is everted, and apparently the paratergites serve as hinge plates: in repose the ovipositor is completely enclosed by the sterna to the apex of the abdomen, the apical sternum being enlarged and pointed. In the Bothriothoracini the recurved sides of the true eighth tergum adhere closely to the lateral margins of the tenth tergum without having any plate between them, and the styli are present and generally movable apart from the plates that bear them: the styli are seldom completely enclosed by the apical sternum, and in the act of oviposition only the shaft of the ovipositor extrudes. The Anagyrini are parasites of mealybugs.

I became interested in Dr. Compere's ideas on Encyrtid classification in the course of prolonged correspondence with him on the subject of a number of genera, principally Anagyrine, that I had received for study (e.g., Kerrich, 1953). When I visited him in 1956, he not only enabled me to study the incomparable material located at Riverside, but also initiated me into his ideas on the subdivision of the

Anagyrini. He has not wished to undertake the furtherance of these ideas himself, but has desired me to develop them in connection with the revision of a number of the genera. For this enlightenment and impetus I wish to express my deepest gratitude.

Classification of Anagyrini

ANAGYRINI

The Anagyrini are here divided into five sub-tribes in the following manner:

1. **Anagyrina** (*sec.* Anagyrini Hoffer, 1954). This sub-tribe is characterized by having the tenth tergum of the female enormously enlarged, so as to cover the greater part of the abdomen (Pl. I, fig. 1 and Compere, 1947, fig. 6). The paratergites are long and narrow. The head is of normal shape, and is neither strongly sclerotized nor coarsely punctate. Many of the genera were included in the key given by Compere, and others were adduced by Burks (1952). Other genera belonging here are *Anusia* Förster, 1856, *Doliphoceras* Mercet, 1921, *Ectromatopsis* Compere, 1947, *Paraenasioidea* Hoffer, 1954, *Leptanusia* De Santis, 1964 *Aglyptoideus* De Santis, 1964 and *Alamella* Man Mohen, 1966.

2. **Ericydnina** (*sec.* Ericydnini Hoffer, 1955, also Ericydnina Erdös & Novicky, 1955). This group is negatively characterized by not having the tenth tergum of the female enormously enlarged, as in the first subtribe, nor the head as in the two following. The paratergites, usually present, are long (Pl. I, fig. 2), and still more slender than in the first group. The male antennae are long-hairy in several genera and ramose in some (e.g., Text-fig. 19). A key to the genera is given below, for both sexes where known, except for the close relatives of *Xanthoencyrtus* already dealt with in the important paper of Ghesquière (1956).

3. **Aenasiina subtrib. n.** These are stout-bodied forms with a rigid integument, and some of them have a close superficial resemblance to such genera as *Bothriothorax*. The head is strongly sclerotized and coarsely punctate, often with strong thimble-punctures, and in some genera it is menisciform (see numerous Text-figures following). The fore femora are decidedly stout. The mandibles are often tridentate, in which case the middle tooth is the longest. The paratergites are widened basally near the cerci and taper to hairline thickness apically (Pl. II, fig. 1). Short, wide styli are present. The males have not been studied, but for the females a key to the six genera is given below, and the species of all but one of these genera are revised.

4. **Dinocarsiina** (*sec.* Dinocarsiini Hoffer, 1952). These genera are characterized by having a rather strongly sclerotized, broadened head, usually with the facial area sunk, and bordered by a very sharp ridge, and by having relatively much broader paratergites (Pl. II, fig. 2). In most genera the submarginal vein runs up to junction of the postmarginal and radial, and the marginal is virtually absent; but in the European genera *Dinocarsis* and *Dicarnosis*, which lack the sharp margin to the facial impression, the marginal vein is distinct but not contiguous with the wing margin, and the postmarginal is absent or vestigial. A cleared preparation of *Dinocarsis* shows the broad paratergites. The genera belonging here are *Dinocarsis* Förster, 1856, *Dicarnosis* Mercet, 1921, *Zarhopalus* Ashmead, 1900, *Acroaspidia*

Compere & Zinna, 1955, *Coelaspidia* Timberlake, 1923, *Chrysoplatycerus* Ashmead, 1889, *Hambletonia* Compere, 1936, *Tropidophryne* Compere, 1931, *Neoplatycerus* Subba Rao, 1965 and *Zaplatycerus* Timberlake, 1925. The present author plans a study of these genera to be published in a subsequent paper.

5. **Aphycina** (*sec.* Aphycini Hoffer, 1954). A key to the genera was given by Compere & Annecke (1960, p. 37). The group is characterized as small, not heavily sclerotized insects, with frontovertex and dorsum of thorax often more or less velvety in appearance. The female hypopygium is boat-shaped and sharp to flatter or even more roundedly truncate at apex, and the ovipositor often projects by about a quarter the length of the gaster. Paratergites are present in some genera. The fore wings have the marginal vein not much longer than broad, the radial rather short and the postmarginal very short. Kerrich (1964) has transferred *Dusmetia* Mercet, 1921 to this group. The curious *Anagyrietta* Ferrière, 1955 seems best placed here.

Descriptive Technique

Descriptions and redescriptions have been made comparatively. All species treated have been compared in all respects mentioned with the species most closely related to them and, where relative terms are used, it is to be assumed that " very weakly ", " weakly ", " rather weakly ", " moderately ", " rather strongly ", etc. represent gradations.

It is important that the conditions of illumination under which the descriptions have been made should be understood. Whereas a strong spotlight has been used for illumining shapes, especially those of smaller structures such as mandibles and antennal segments, it has not been used for colour or finer sculpture, which have been studied with good daylight supplemented by an ordinary bench lamp. When an insect having structural colour is examined with a spotlight, this penetrates to the underlying melanin, and the structural colour disappears from view or becomes greatly changed. Likewise, a spotlight eliminates or reduces fine shadow, so that fine striation or microsculpture may disappear from view, and all but the coarsest punctures may appear smaller than they really are. Punctures seem more reliably viewed from the side than from in front or behind. It may be necessary to view the punctures without a spotlight, and then to turn the spotlight on in order to view the hairs that arise from them.

Venation has been viewed, so far as possible, with good transmitted daylight only. Artificial light, even from a bench lamp, may cause reflections from the wing margin, and the edges of the veins and even from hairs, making the precise limits of the veins, especially when they are almost colourless, very difficult to observe.

Where wing proportions are quoted, the length has been measured from the apex of the tegula.

ERICYDNINA

Key to Genera of the *ERICYDNINA*

1 Antennal funicle 5-segmented in both sexes, ramose in male: [frontovertex relatively broad] 2

— Antennal funicle 6-segmented in both sexes, seldom ramose in male . . . 4

2 Brachypterous in both sexes: whole thorax flattened in both sexes, the scutellum very little raised above metanotum: antennae of female moderately compressed and strongly clavate, of male with three long rami: New Zealand, Campbell Is.
ANTIPODENCYRTUS Kerrich, 1964

Brachypterous forms unknown: scutellum well raised above metanotum: antennae of female otherwise, of male with more than three rami 3

3 Scutellum normally convex and moderately shining: fore wings more or less clear, and with submarginal vein strongly arcuate in both sexes (Text-figs. 21–24): male antennae with four long rami and a vestige (Text-fig. 19): female antennae moderately compressed and moderately clavate (Text-fig. 20)
HUNGARIELLA Erdös, 1955
(=*Tetracnemus* Timberlake, 1929 *non* Westwood, 1837)

Male very much as above, but antennae with a small but distinct fifth ramus. Female having scutellum flattened above and dull, the fine reticulate microsculpture strongly outstanding: antennae notably stout and very strongly compressed: fore wings with a broad band of infuscation across middle and with submarginal vein only moderately arcuate: Australia . . . ***ANARHOPUS*** Timberlake, 1929

4 Brachypterous, i.e. very short-winged forms 5

Macropterous, or with wings not greatly reduced 8

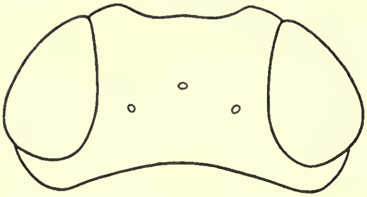
5 Head, seen from above, semilunar: eyes nearly reaching back of head, always distinctly pubescent: lateral ocelli close to eye margins: frontovertex not shining, but with reticulate microsculpture very fine to moderate, and beset with moderate punctures that commonly are separated by about their own diameters though they may be very sparse in middle before median ocellus: mesoscutum of normal proportions, its median length decidedly greater than that of pronotum: scutellum laminate at apex: propodeum of normal length, with a pair of transverse keels (Text-figs. 27–29) and also a pair of longitudinal keels which run back from the spiracles and often border a spiracular sulcus . . . ***ERICYDNUS*** Walker, 1837

Head otherwise, more or less lenticular: eyes not nearly reaching back of head, not or not distinctly pubescent: lateral ocelli remote from eye margins: frontovertex shining, with punctures extremely sparse and fine: mesoscutum uncommonly strongly transverse, its median length approximately equal to that of pronotum, or sometimes considerably less: scutellum not laminate: propodeum without such keels 6

6 Head, seen from above, very strongly transverse (Text-fig. 1): toruli distinctly a little above lower level of eyes, separated from mouth by much more than their own length: antennae with scape elongate and slender, reaching far above top of head, and with funicle segments all decidedly longer than broad: scutellum with a pair of basal fossae (N.B. not in macropterous form!): propodeum of normal proportions, with a distinct median area bordered by sharp keels (Text-fig. 2)
AGLYPTUS Förster, 1856
(= *Ectroma* auctt. *non* Westwood)

Head less strongly transverse: toruli below lower level of eyes, separated from mouth by about their own length: antennae with scape not over-reaching top of head, and with funicle segments less elongate, the sixth about quadrate or transverse: scutellum without basal fossae: propodeum very short in middle and with no distinct median area 7

7 Eyes of normal proportion, each one, as seen from above, about half breadth of frontovertex (Text-fig. 4): antennal scape rather slender, over four times as long as broad: pronotum conical, about half as long as broad and one and a half times median length of the mesoscutum (Text-fig. 5): axillae contiguous or almost so: first large tergite about half the total length of gaster . ***AQUAENCYRTUS*** Hoffer, 1953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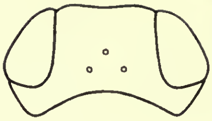
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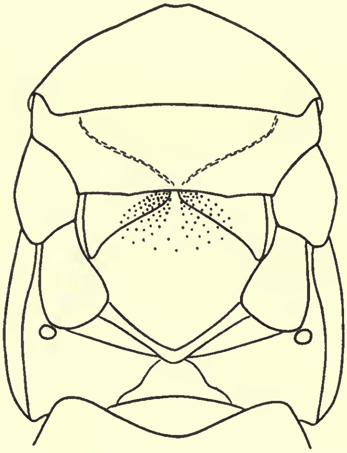
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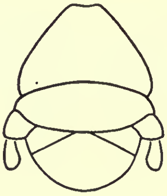
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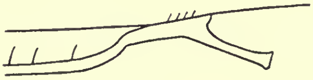
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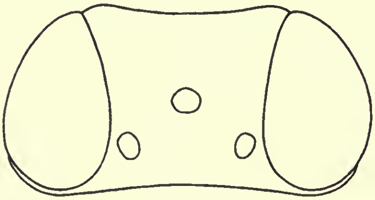
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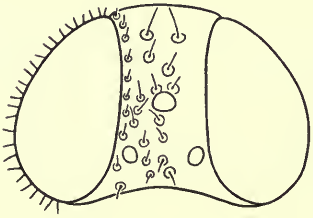
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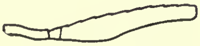
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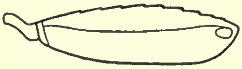
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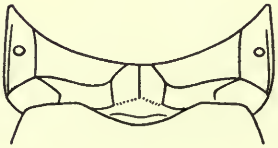
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Eyes relatively small, each one, as seen from above, about a quarter the breadth of frontovertex: antennal scape stout, much less than twice as long as broad; pronotum little more than a quarter as long as broad and about equal in length to the mesoscutum: axillae widely separated: first large tergite much less than half the total length of gaster . . . . . . ***NEODUSMETIA*** Kerrich, 1964

8 Lateral ocelli remote, i.e. much more than their own diameters, from eye margins . 9

Lateral ocelli close to eye margins, i.e. about their own diameters therefrom, or sometimes still closer 16

9 Male antennae ramose: ovipositor strongly exserted: in both sexes antennal club solid and postmarginal vein very short 10

Male antennae not ramose: ovipositor not or only weakly exserted, or if it is strongly exserted (*Ericydnus caudatus* Erdös) the antennal club is 3-segmented and the postmarginal vein is decidedly long 11

10 Head more or less rounded in front: frontovertex with reticulate microsculpture (as microsculpture) regular, coarse and strongly outstanding: mandibles bidentate: marginal vein several times as long as broad, and radial emitted at nearly a right angle to it: antennal flagellum in female strongly compressed, in male with four long rami borne on segments 2–5: female with fore wings strongly bifasciate; with scutellum strongly shining, beset with very fine and sparse piliferous punctures in about basal half, and with microsculpture exceedingly fine
TETRACNEMUS Westwood, 1837
(= *Tetracladia* Howard, 1892, *Masia* Mercet, 1919, *Comperencyrtus* De Santis, 1964)

Head quite strongly emarginate in front: frontovertex with reticulate microsculpture fine, not strongly outstanding: mandibles sharply tridentate, the lowest tooth a little set back; marginal vein rather short, i.e. hardly three times as long as broad, and radial emitted at about 45° with it: antennal flagellum in female not strongly compressed, in male with five long rami borne on segments 1–5: female with wings hyaline; with scutellum rather dull, beset with sparse piliferous punctures, the reticulate microsculpture becoming coarser toward apex but not strongly outstanding. . . . . ***PENTACLADOCERUS*** Erdös, 1964

11 Head markedly broader than thorax (Text-figs. 1–2): antennae with scape elongate and slender, reaching far above top of head: scrobes absent or shorter than toruli: marginal vein several times as long as broad, almost parallel-sided (Text-fig. 3 and Timberlake, 1926, fig. 1): males unknown 12

Head not or little broader than thorax: antennae with scape not reaching, or at any rate not reaching far above, top of head: scrobes longer than toruli: marginal vein shorter, markedly expanded to point at which radius is emitted 13

12 Eyes not nearly reaching occiput, which is not sharply margined: ocelli in a very obtuse triangle (Text-fig. 1): scrobal impression distinct though not sharp: toruli higher on face, their lower margins about on lower level of eyes: mesoscutum with fore and hind margins sub-parallel, with notauli sharply but weakly impressed: scutellum not small, about twice length of mesoscutum, obtusely round-pointed at apex (Text-fig. 2): fore wings rather narrow but of more or less normal shape,

FIGS. 1–10. 1–3. *Aglyptus lindus* Först., female. 1, head, seen from above; 2, thorax, propodeum and base of gaster of brachypterous form, seen from above; 3, part of right fore wing. 4–5. *Aquaencyrtus bohemicus* Hffr., female. 4, head, seen from above; 5, part of thorax, seen from above. 6. *Grandoriella lamasi* Domen., female head, seen from above. 7. *Parastenoterys bollowi* (Mercet), female head, seen from above; 8. *P. flaviclava* De S., propodeum, drawn from specimen in Madrid museum; 9. *Dinocarsiella alpina* (Grlt.), right antennal scape of female in dextro-lateral view; 10. *Xanthoectroma aquilinum* Mercet, female, left antennal scape in dextro-lateral view.

hyaline except for some weak infuscation below the radial vein but normally hairy: radial vein longer than marginal, and postmarginal very short (Text-fig. 3): Europe **AGLYPTUS** Förster, 1856
(= *Ectroma* auctt. *non* Westwood)

Eyes nearly reaching occiput, which is sharply margined: ocelli in a slightly obtuse triangle: face without scrobal impressions: toruli lower on face, their upper margins about on lower level of eyes: mesoscutum considerably longer medially than at sides: scutellum small, about two-thirds length of mesoscutum, acutely round-pointed at apex: fore wings spatulate, broadly constricted before marginal vein and with apical half oval, in greater part strongly infuscated and hairy, but with five bare hyaline areas: radial vein decidedly shorter, and postmarginal slightly shorter, than marginal: Australia . . **VOSLERIA** Timberlake, 1926

13 Fore wings strongly infuscate and dark-hairy, with hyaline areas densely beset with paler hairs: ocelli in a small, acute-angled triangle, the lateral about three times as far from orbital as from occipital margin: antennal scape several times as long as broad, rather strongly dilated below for its whole length, and sub-parallel sided for about half its length (Text-fig. 9): [funicle segments much longer than broad, beset with rather strong, and in male rather long, hairs]
DINOCARSIELLA Mercet, 1921

Fore wings hyaline or with infuscation weak: ocelli in a large, obtuse-angled triangle: antennal scape shaped differently 14

14 Notauli sharply and strongly impressed, very distinct (Mercet, 1925, fig. 1); in position rather as in *Aglyptus* illustrated in Text-fig. 2 but much stronger: propodeum relatively long, about half length of scutellum: antennal scape (Text-fig. 10) about reaching top of head, elongate, about six times length of its greatest breadth, in about basal two-thirds distinctly but weakly dilated below, in apical third narrower than greatest width of pedicellus: funicle segments all much longer than broad, not markedly hairy: male unknown **XANTHOECTROMA** Mercet, 1925

Notauli not distinct: propodeum short: antennae with scape relatively much shorter, not nearly reaching top of head, and with funicle segments relatively shorter and markedly hairy 15

15 Males: rather stout-bodied, moderately sclerotized insects of medium brown colour: head normally hypognathous: eyes not appreciably hairy: pronotum moderately emarginate behind: antennae sparsely beset with short, stiff hairs, the funicle segments about quadrate to transverse and the club solid: wings with postmarginal vein not very much shorter than radial **NEODUSMETIA** Kerrich, 1964

Both sexes: rather elongate, flattened insects, the females pale yellow to pale brown but the males darker: head of male somewhat forwardly-directed, of female strongly so and with toruli very close to oral margin: eyes strongly though rather sparsely hairy: pronotum deeply emarginate behind: antennae of female rather densely hairy, with funicle segments sub-quadrate to strongly transverse and club 3-segmented, of male bearing rather long hairs, with funicle segments well separated, elongate-moniliform, and with club solid: wings with postmarginal vein very short . . . . **XANTHOENCYRTUS** Ashmead, 1902
(and closely related genera, see Ghesquière, 1956)

16 Marginal vein stout, about twice as long as broad: sub-marginal greatly and sharply expanded near apex, i.e. at junction of the obsolete basalis: postmarginal very short *and* frontovertex decidedly broader than an eye: small, stout-bodied insects, of length about 0·7 mm., with proportionately short antennae and legs, and without green or purple coloration: eyes relatively densely hairy
PAURIDIA Timberlake, 1919

Marginal vein relatively slender, usually quite three times as long as broad, at least in female: submarginal vein not thus expanded: if the postmarginal is very short, the frontovertex is narrower than an eye: larger insects with bright coloration 17

17 Frontovertex decidedly broader than an eye: marginal vein long and narrow, several times as long as broad (in case of doubt the scutellum laminate at apex), and postmarginal distinctly longer than marginal: propodeum with a pair of transverse keels which, at sides, bend round and run to hind margin, not with a distinct median keel (Text-figs. 27–29): elongate, slender forms, with antennae and legs of female decidedly elongate: antennae of female slightly compressed, of male generally rather more so, and not with long stout hairs 18

Frontovertex of female generally decidedly narrower than an eye, seldom slightly broader: marginal vein about three times as long as broad: scutellum not laminate at apex: forms not especially elongate and slender, and with antennae otherwise 19

18 Scutellum sharply margined at apex but not laminate, strongly raised above propodeum: propodeum with no keel running back from spiracle and with no distinct median area: head in both sexes relatively broad (Text-fig. 6): styli (ovipositor sheaths) not developed: no distinct sexual dimorphism in form of antennae, which have the pedicellus relatively short in both sexes: micropterous forms unknown: Peru to southern California . . . . ***GRANDORIELLA*** Domenichini, 1951

Scutellum weakly to strongly laminate at apex, not strongly raised above propodeum: propodeum having a keel (present but difficult to see in *japonicus* (Tachikawa)) that runs back from the spiracle and often borders a sulcus, and usually having a distinct median area: head of female generally relatively narrow: styli strongly developed, though often concealed: distinct sexual dimorphism in form of antennae, the males having the pedicellus relatively short and the flagellum relatively elongate, the females not so: Europe, Japan, California ***ERICYDNUS*** Walker, 1837

19 Antennae of female having scape greatly dilated below and flagellum greatly flattened, of male compressed and ordinarily strongly hairy, not with long, stout hairs, the funicle segments strongly transverse in both sexes: postmarginal vein very short: fore wings of female deeply infuscate, with a hyaline fascia: Australia ***ANUSOIDEA*** Girault, 1926

Antennae of female having scape not greatly dilated and flagellum not greatly flattened, the funicle segments not strongly transverse in either sex: marginal vein about three times as long as broad and postmarginal a little longer or shorter than marginal: wings hyaline 20

20 Head rather elongate: eyes with pilosity sparse but strong (Text-fig. 7): frontovertex with reticulate microsculpture regular and of moderate strength, giving the surface a more shining appearance, the punctures before the ocelli large and of almost moderate depth (Text-fig. 7): upper mandibular tooth very sharp and much the longer: propodeum rather shining above, with a strongly raised median keel, and sharply margined at sides (Text-fig. 8): larger, quite strongly sclerotized insects: South America . . . ***PARASTENOTERYS*** Girault, 1915, De Santis, 1964 (= *Parencyrtus* Mercet, 1928 *non* Ashmead, 1900)

Head much more transverse: eyes with pilosity of moderate strength and density (Text-figs. 36–37): frontovertex with reticulate microsculpture fine but irregular, giving the surface a dull appearance, the punctures before the ocelli small and superficial: mandibles clearly bidentate, the teeth subequal, the upper tooth rather rounded at apex: propodeum with very superficial reticulate microsculpture, with no distinct median area or keel, and not sharply margined at sides: smaller, rather weakly sclerotized insects, predominately purple and green in colour: Asia, Africa. . . . . ***CLAUSENIA*** Ishii, 1923

Discussion of some Genera

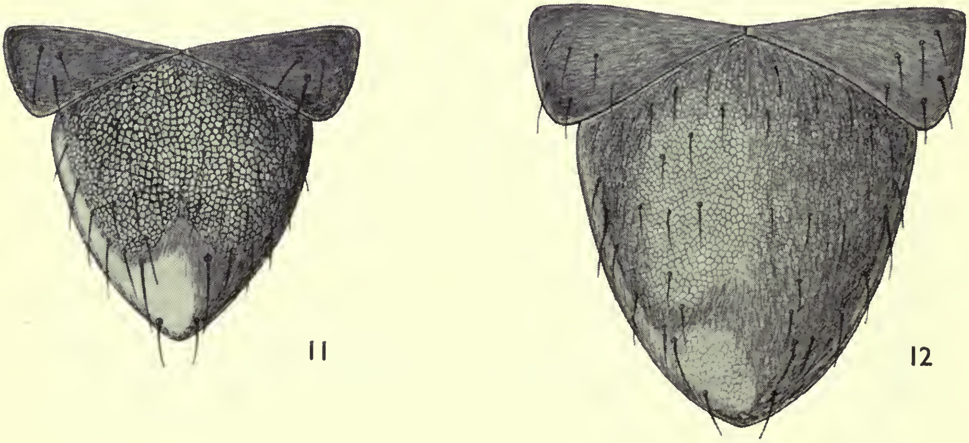
Dinocarsiella Mercet. Dr. A. Hoffer kindly sent me material of *Dinocarsiella* Mercet. A cleared preparation of a female specimen shows slender paratergites.

I consider the genus not to be closely related to *Dinocarsis* Förster but to belong in the Ericydnina, and in consequence I have included it in the above key.

Pentacladocerus Erdös. The position of this genus is more problematic. Dr. J. Erdös kindly sent me on loan a female specimen of *P. matranus* Erdös, which has enabled me to make direct comparison with *Tetracnemus* Westwood. There is considerable resemblance between the two, notably in the boat-shaped female hypopygium and projecting ovipositor and in the ramose male antennae. However *Pentacladocerus* has the mandibles, which Erdös did not describe, sharply tridentate, with the lowest tooth a little set back.

Comperencyrtus De Santis, 1965. De Santis gave a careful description and figure of a new genus *Comperencyrtus* based on a single male. A paratype in the British Museum (Natural History) of *Tetracladia hispanica* Mercet agrees with this description in all respects except that it lacks the pair of longitudinal carinae on the middle of the propodeum, that the sixth funicle segment is relatively a little longer, and that I believe the eyes to be hairy, though only very weakly and sparsely so. Consequently I place *Comperencyrtus* De Santis in synonymy with *Tetracnemus* Westwood **(syn. n.)**.

Parastenoterys Girault, De Santis. I have examined material from the Madrid museum treated by Mercet (1928) as *Parencyrtus* Ashmead, and also female paratypes of *Parastenoterys flaviclava* De Santis, and am fully satisfied that these are congeneric. I agree with De Santis that Mercet should not have placed the species he treated in *Parencyrtus*, since Ashmead placed this genus in the " Mirini ", with tridentate mandibles, and also described the postmarginal vein as much longer than the marginal, and the propodeum as short. Dr. Burks has informed me that the unique type of *Parencyrtus brasiliensis* Ashmead was missing from the pin when the H. H. Smith collection came to Washington.



FIGS. 11–12. *Parastenoterys* species, females. Scutellum of 11, *P. flaviclava* De S. and 12, *P. bollowi* (Merc.). G. Viggiani del.

Provisionally, I accept De Santis' placement of the South American species in the genus *Parastenoterys* Girault, though I am not fully convinced that this will stand. The South American species have the two mandibular teeth very unequal, the propodeum with a median area of normal proportions containing a strong median keel, and the styli absent or concealed. *Parastenoterys punctatus* Girault was described as having two equal mandibular teeth, and this is to be accepted since, from Girault's method of crushing the head on a slide, they should have been clearly visible. The propodeum is strongly margined at sides as in the South American species, but has the median area more than a third the width of the sclerite and strongly reticulate rugose, with no defined median keel. The very regular, close thimble-punctation of the mesopleura is a remarkable feature. Contrary to Girault's description there are, in fact, shortly projecting styli as indicated by Girault for *Parectromoides*, which he himself declared to be congeneric.

The specimen in the Madrid museum labelled as *Parencyrtus brasiliensis* Ashmead in Mercet's writing I believe to be a large, pale form of *Parastenoterys flaviclava* De S. The frontovertex is one-quarter wider than an eye, with ocelli in a slightly obtuse triangle: the scutellum in greater part has the reticulate microsculpture very strongly outstanding, but on hinder part and at sides is quite smooth and strongly shining (Text-fig. 11): the antennal scape is five times as long as broad. In *bollowi* Mercet the frontovertex is narrower than an eye, with ocelli in a decidedly acute triangle (Text-fig. 7): the scutellum in greater part has the reticulate microsculpture rather strong, though decidedly less outstanding than in *flaviclava* De S., and in hinder part is more shining but not strongly so, with the reticulate microsculpture, though weak, quite distinct (Text-fig. 12): the antennal scape is seven times as long as broad. I believe the other specimens placed by Mercet as *brasiliensis* to belong to a different species.

Calliencyrtus De Santis, 1959 and **Heteroleptomastix** Ishii, 1928. De Santis, in describing his new genus *Calliencyrtus*, related it to *Heteroleptomastix* Ishii. Conversely Tachikawa (1963, p. 51) considered *Heteroleptomastix* as allied to *Calliencyrtus*. The latter author further (pp. 51, 56–8) compared *Heteroleptomastix* and *Calliencyrtus* with a form that he considered to be a *Grandoriella* but which is shown below to be an *Ericydnus*. He stated "To determine whether *Heteroleptomastix* belongs to a true Ectromini or not, further study may be necessary."

I have not seen any *Heteroleptomastix*, but Prof. De Santis has very kindly sent me on loan the unique type of his species *C. bucculentus*. This confirms the general resemblance between the two genera evident from the drawings of De Santis (1959) and Ishii (1928, p. 105) respectively, though I do not see that the pronotum is significantly more strongly developed in *Calliencyrtus*.

Examination of *Calliencyrtus* shows the following: (1) mandibles decidedly stout, with three sharp teeth, the uppermost slightly the weakest, (2) paratergites absent, (3) ovipositor arising well before apex of gaster. I consider that the genus should be excluded from the Anagyrini. Ishii figured the mandible of *Heteroleptomastix* as being stout, and as having two rather sharp teeth and something of a truncation: I believe this genus should be excluded from the Anagyrini also.

HUNGARIELLA Erdös, 1946

1946 *Hungariella* Erdös, *Annls hist.-nat. Mus. natn. hung.* **39** : 144–5.
1929 *Tetracnemus* Westwood ; Timberlake, *Univ. Calif. Publs Ent.* **5** (2) : 5–11 [Mis-identification].
1951 *Tetracnemus* Westwood ; Kryger, *Ent. Meddr* **26** : 116–21 [Mis-identification].
1955 *Hungariella* Erdös, *Acta zool. hung.* **1** (3–4) : 216–8.

Our knowledge of this genus really dates from the paper of Timberlake (1929), who gave a very full description of a new species *pretiosa*, which was being cultured at the Citrus Experiment Station, Riverside, California. Timberlake's generic identification followed that of Howard who at first (1890, 1892) quoted Westwood's description of *Tetracnemus diversicornis*, redrew his figure of that insect, and in the latter paper proposed a tribal name Tetracnemini for a group of genera of Encyrtidae having branched antennae in the male. Later, as stated by Timberlake, Howard received from New Zealand a species of the genus now under review, attributed it to *Tetracnemus* Westwood and gave it the manuscript name *brounii*. Timberlake (1929) validated *brounii* by a brief comparison with *pretiosa*.

Ashmead (1904) and, following him, Schmiedeknecht (1909) placed *Tetracnemus* in the tribe Ectromini, containing a number of other genera such as *Leptomastix* Förster, *Anagyrus* Howard and *Aglyptus* Förster (=*Ectroma* auctt. *non* Westwood), which were not included by Howard in his concept of the Tetracnemini.

The Howard–Timberlake interpretation was accepted by Compere (1939), Peck (1951), Kryger (1951), Nikol'skaya (1952) and Ferrière (1955, 1957). Kryger (op. cit.) redescribed the species believed to be *Tetracnemus diversicornis* Westwood. It was not accepted by Mercet (1921, 1922, 1932), Erdös (1955), who considered *Tetracnemus* Westwood to be a *genus dubium*, and Hoffer (1959). Erdös meanwhile (1946) had described *Hungariella piceae* gen. et sp. nov. In 1955 he established the identity of *Hungariella* with *Tetracnemus* auctt. and considered his species *piceae* to be the same as that attributed by Kryger to *diversicornis*.

The supposed *diversicornis* were redescribed further and in both sexes by Ferrière (1955). Ferrière in 1955 considered *diversicornis* Westwood Kryger and *piceae* Erdös as provisionally distinct, but in 1957 he wrote that they were probably synonymous. I have compared a male paratype of *piceae* with material redescribed by Ferrière, and am quite satisfied that they belong to the same species.

The various arguments need not be repeated here, for the controversy has now been settled by Graham (1959), who has rediscovered the long-lost type of *Tetracnemus diversicornis* and shown it to be a senior synonym of *Tetracladia hispanica* Mercet. We must, therefore, follow Erdös in placing all species of *Tetracnemus* auctt. in his genus *Hungariella*.

Head from above biconcave, rather strongly to strongly emarginate anteriorly and posteriorly (Text-figs. 13, 15, 17) ; with eyes nearly reaching or over-reaching the occipital margin, pubescent : frontovertex decidedly broader than an eye, more or less finely reticulate : toruli obovate, separated from mouth by about their own breadth (Text-figs. 14, 16, 18) : common scrobal impression large, extending to about half way up orbits or more. Mandibles bidentate. Antennae of moderate length, distinctly but not strongly clavate : scape in female not or but little dilated below : funicle 5-segmented, usually with first segment the longest and second the shortest (Text-fig. 20). Thorax convex and moderately deep dorsoventrally : axillae slightly separated. Propodeum with distinct, fine reticulation in middle, then almost smooth to spiracles, reticulate again on sides. Legs of ordinary length and structure. Fore wings differing from description of those of *Clausenia* Ishii as follows : submarginal strongly arcuate at junction with the obsolete basalis, so that the costal cell is not nearly parallel-sided, having several stout hairs on the basal abscissa and a closer row of rather smaller ones on prestigma : marginal vein about twice or less as long as broad, and postmarginal reduced to a mere stub (Text-figs. 21–24).

Species prominently a rather bright green, at least on frontovertex and mesoscutum, and usually on propodeum : scutellum in most bronzy : legs mostly stramineous, yellow-stramineous or pale testaceous. Mandibles, unless otherwise stated, pale brown, darker at apices.

Male differs as follows—head with frontovertex relatively much wider than in female, and with ocelli larger and more outstanding. Toruli separated from mouth by a little less than their own length. Antennae (Text-fig. 19, see also Compere, 1939, fig. 2, Ferrière, 1955, fig. 26) with scape always shorter and broader than in the female of the same species, not nearly reaching top of head even in *piceae* Erdös ; ramose, having one long ramus arising from base of first funicle segment and one arising at apex of each of the three following : funicle sparsely long-hairy on segments and rami, and club more densely hairy, with shorter but still prominent hairs.

Altogether duller coloured than the female, having the green colour much darker, sometimes indistinct or replaced by blue, and having a greater amount of dark colour on the legs.

Type-species *H. piceae* Erdös, 1946.

The species that has been best known, *H. pretiosa* (Timberlake), 1929, is probably also the most typical, and in this work the other species are described mainly in relation to it. *H. piceae* is a rather isolated species.

Hungariella pretiosa (Timberlake)

(Text-figs. 15–16, 21)

1929 *Tetracnemus pretiosus* Timberlake, *Univ. Calif. Publs Ent.* **5** (2) : 5–11.
1939 *Tetracnemus pretiosus* Timberlake ; Compere, *Ibidem*, **1** (4) : 60–1.

Head from above (Text-fig. 15) rather strongly emarginate anteriorly and strongly so posteriorly ; with eyes not quite reaching occipital margin ; with lateral ocelli about their own diameters from orbital margin ; in facial view with cheeks almost straight and, as described by Timberlake, converging to the rather broad oral margin (Text-fig. 16). Eyes moderately hairy, distinctly so × 65. Frontovertex with reticulation of moderate strength and rather regular, the superimposed punctures mentioned by Timberlake difficult to discern : sides of face and inter-scrobal prominence more finely scaly-reticulate, the cheeks very weakly so.

Antenna as described and figured by Timberlake (1929), notably the scape elongate but not nearly reaching top of head, and the first funicle segment about 2½ times as long as broad, longer than any of the four following segments.

Reticulation on mesoscutum about as on frontovertex, less outstanding on axillae and often finer on scutellum.

Fore wings moderately infuscate beyond speculum ; with prestigma considerably thickened ; with marginal vein nearly twice as long as broad ; with speculum traversing the radius, which is emitted at a not very acute angle (Text-fig. 21).

Head in greater part, mesoscutum and sides of propodeum metallic green with brassy to, in places, bronzy reflections : propodeum above a paler, brighter green (weakly developed in paratype series) : scrobal impressions, pronotum at sides, axillae, scutellum and usually mesopleura bright bronzy : occiput, pronotum above and sternal regions brownish to blackish with weaker metallic reflections, gaster the same, but with first large tergite mainly blue-green. Antennae pale brown, with weak metallic green reflections, much paler on about basal third of scape, and on pedicellus at apex and beneath. Legs having hind coxae except at extreme apex, and mid coxae at extreme base, as sides of gaster but paler; otherwise mainly yellow-stramineous, the tarsi, tibiae and hind femora above tending to rufo-testaceous, the tarsi infuscate at apex.

Male differs as follows: punctation on frontovertex less difficult to discern and reticulations rather finer than in female, but on sides of face and inter-scrobal prominence similar to that on frontovertex. Antennae, as in most species, with fourth ramus very distinctly over-reaching fifth funicle segment: club about one-fifth longer than scape without radicle. Sculpture of mesoscutum, scutellum and mesopleura about as in female. Fore wings relatively considerably broader, and with postmarginal more reduced.

Altogether duller coloured than female: head and mesoscutum a very much darker green or almost blue, the scrobal impressions not markedly different: axillae, scutellum and mesopleura much less bronzy: remainder of body mostly brownish black with weak metallic reflections, the propodeum green only at sides and the first large tergite not markedly green. Antennae pale brown, with weak metallic reflections; with scape flavo-testaceous in about basal two-thirds. Fore and mid coxae broadly at base, hind femora and tibiae except at base and beneath, and hind tarsi brown with metallic reflections: fore and mid tibiae very slightly darkened in part.

Redescribed from a series of 18 ♀, 11 ♂. The stocks originated from AUSTRALIA: New South Wales, Sydney, *ex Pseudococcus fragilis* Brain, em. i–iii.1928 (*H. Compere*) (see Timberlake, 1929) and have since been reared in California in the insectaries at Riverside and Fontana. The series also includes 3 ♀, 2 ♂ reared vi–vii.1931 from *Pseudococcus longispinus* Targ. (=*adonidum* auctt.) at Epping, N.S.W., by S. Flanders.

Timberlake (1929) figured the antennae in both sexes of this species as did Compere (1939) for his species *peregrina*. Comparison of these published figures of the male antennae would appear to show a considerable difference not only in the relative length but also in the proportion of the antennal club, but a study of dry specimens indicates that this is largely illusory. Compere evidently drew an antenna in which the whole width of the compressed club segment was apparent, whereas Timberlake must have drawn one in which the club was turned more or less sideways.

Hungariella piceae Erdös

(Text-fig. 14, Pl. III)

1946 *Hungariella piceae* Erdös, *Annls hist.-nat. Mus. natn. hung.* **39**: 145–7.
1951 *Tetracnemus diversicornis* Westwood; Kryger, *Ent. Meddr* **26**: 119–21.
1955 *Tetracnemus diversicornis* Westwood; Ferrière, *Mitt. schweiz. ent. Ges.* **28** (1): 133–5.

Head from above shaped about as in *pretiosa* (Timb.) (Text-fig. 15), but with eyes over-reaching occipital margin; in facial view also similar, but relatively longer (Text-fig. 14, cf. Text-fig. 16): lateral ocelli less than their own diameters from orbital margin. Eyes moderately hairy, distinctly so × 65. Frontovertex much more finely reticulate than in *pretiosa* (Timb.), almost as finely so as in the much smaller *coffeicola* sp. n. but less regularly: sides of face, cheeks and inter-scrobal prominence finely scaly-reticulate.

Antenna (see Ferrière, 1955, fig. 25) decidedly elongate and slender: scape much more so than in *pretiosa* (Timb.), reaching or over-reaching top of head: flagellum not sharply clavate but increasing gradually in width to the club: funicle with first segment quite four times as long as broad, and one and a half times as long as the second, third and fourth segments each shorter but fifth longer than the preceding.

Reticulation on mesoscutum coarser than on frontovertex, much less outstanding and in greater part much finer on scutellum, axillae and mesopleura.

Fore wings weakly infuscate beyond speculum ; with prestigma considerably thickened ; with marginal about two and a half times as long as broad ; with speculum not traversing the relatively elongate radius.

Differs from *pretiosa* (Timb.) as follows : green coloration much less extensive, on head reaching neither occiput nor lower level of eyes and on propodeum only on upper part of sides : hind margin of frontovertex, cheeks, remainder of face and pronotum above bronzy like the scutellum : mesopleura and sternum, propodeum in greater part, and sides of gaster pale brown with weak metallic reflections, the gaster above darker and with the reflections stronger. Mandibles stramineous, darker at apices. Antennae pale brown, paler than sides of gaster, and with weak metallic reflections ; having the following stramineous : radicle except at base, scape broadly beneath in about basal half, pedicellus almost wholly, funicle above to about middle of first segment and beneath to about apex of third, though merging gradually to the brown colour. Legs, including hind coxae, mostly stramineous ; having mid and hind femora at extreme apex, fore femora and all tarsi pale testaceous ; having hind coxae at extreme base, third quarter or more of hind femora, and apical segment of all tarsi pale brown, with weak metallic reflections.

Male differs as follows : reticulation on frontovertex finer than in female but sharper and more outstanding : sides of face and inter-scrobal prominence finely scaly-reticulate, cheeks very weakly so. Antennae with rami appearing long but actually not relatively so, the fourth ramus not far over-reaching the fifth funicle segment. Reticulation on mesoscutum about as on frontovertex, much weaker and less regular on scutellum, axillae and mesopleura. Fore wings relatively a little broader, with marginal vein markedly shorter and stouter.

Green coloration about as extensive as in female but darker : remainder of body medium to dark brown with more or less weak metallic reflections, only the scutellum and axillae pale bronzy and decidedly shining. Antennae pale brown, with weak metallic reflections ; with scape stramineous in about basal two-thirds, and with pedicellus pale testaceous at apex and beneath. Mid coxae at base, hind coxae wholly, and hind femora except at extreme base brown with metallic reflections : hind tibiae dark marked broadly at apex and before base.

Redescribed from the following material: HUNGARY: Kalocsa, 3 ♂, 30.v.1951, on *Picea excelsa* (*J. Erdös*) (paratypes). GERMANY: Erlangen, 2 ♀, 3 ♂, 10.v.1950, *ex Phenacoccus piceae* (Loew) (*H. Schmutterer*).

Hungariella spilococci (Ferrière)

1957 *Tetracnemus spilococci* Ferrière, *Opusc. zool., Münch.* **10** : 4–5.
1963 *Hungariella spilococci* (Ferrière) Bachmaier, *Beitr. Ent.* **13** : 560–1.

Head from above strongly emarginate anteriorly and posteriorly ; with eyes not quite reaching occipital margin ; with lateral ocelli about 1½ times their own diameters from orbital margin ; in facial view as described for *pretiosa* (Timb.) but relatively even longer than in *piceae* Erdös. Eyes strongly but not very densely hairy, very distinctly so × 45. Frontovertex much more finely reticulate and shining than in *pretiosa* (Timb.) but distinctly less so than in *piceae* Erdös : sides of face with reticulation as outstanding as it is between ocelli, but cheeks very finely scaly-reticulate.

Antenna more elongate and slender than in *pretiosa* (Timb.), the scape reaching about to level of top of eyes, the first funicle segment three and a half times as long as broad, much longer than any of the following segments.

Reticulation on dorsum of thorax as described for *pretiosa* (Timb.), i.e. on mesoscutum much coarser than on frontovertex of this species : reticulation on mesopleura decidedly finer than on scutellum.

Fore wings moderately infuscate beyond speculum ; with prestigma considerably thickened ; with marginal vein about twice as long as broad ; with speculum traversing the apex of the radius, which is emitted at a much acuter angle than in *pretiosa* (Timb.).

Green coloration about as extensive as in *piceae* Erdös : hind margin of frontovertex, remainder of face, and pronotum purplish bronzy like the scutellum : cheeks and remainder of body brownish black, with strong metallic reflections on cheeks, gaster and sides of pronotum. Antennae blackish brown, with weak metallic reflections ; pale testaceous on scape at extreme base, and on pedicellus at apex and beneath.

Legs mainly stramineous : fore and mid coxae at base, hind coxae and femora almost totally, and tarsal apices brown with metallic reflections : fore and mid coxae in greater part and femora broadly at base, and all trochanters stramineous.

Male differs as follows : reticulation on frontovertex and sides of face as in female, but not nearly so fine on cheeks. Antennae with fourth ramus distinctly a little over-reaching the fifth funicle segment. Sculpture on thorax about as in female. Fore wings relatively only a little broader than in female.

Frontovertex, except for the purplish bronzy hind margin, and mesoscutum green to blue-green with weak brassy reflections : face and cheeks very dull green to steel-blue, with similar reflections : axillae and scutellum coloured about as in *peregrina* (Comp.) : occiput, pronotum, mesopleura, propodeum and gaster brownish black, with metallic reflections. Antennae pale brown with weak metallic reflections, having scape almost stramineous at extreme base. Leg colour about as described for female.

Redescribed from the holotype ♀ and 3 ♂ reared from *Spilococcus nanae* Schmutterer in southern Bavaria by *F. Bachmaier* (see Ferrière, 1957).

Hungariella mediterranea sp. n.

(Text-figs. 13, 22)

Head from above (Text-fig. 13) relatively broad, less deeply emarginate than in *pretiosa* (Timb.) both anteriorly and posteriorly ; with eyes not quite reaching occipital margin ; in facial view similar : lateral ocelli about their own diameters from orbital margin. Eyes strongly and rather densely hairy, very distinctly so × 45. Reticulation of frontovertex a little finer and less outstanding than in *pretiosa* (Timb.) : sides of face, cheeks and inter-scrobal prominence more finely scaly-reticulate.

Antenna similar in proportion to that of *pretiosa* (Timb.), notably the first funicle segment 2½ to nearly 3 times as long as broad.

Reticulation on mesoscutum about as on frontovertex, much less outstanding and usually much finer on scutellum, axillae and mesopleura.

Fore wings much as described for *pretiosa* (Timb.), but relatively much broader, quite strongly infuscate beyond and before the speculum, the prestigma rather less thickened and bearing stronger hairs, the marginal rather longer, and the radius having a long, sharp uncus (Text-fig. 22).

Head and pronotum blue-green to blue and reddish violet, with brassy reflections on frontovertex : mesoscutum and propodeum brassy green or, in smaller specimens, more blue-green, the mesoscutum usually with peripheral violet reflections, the propodeum more indefinitely metallic coloured in middle : scutellum and mesopleura reddish violet, or the scutellum more bronzy : gaster about as head, but the colours less pronounced, having the first large tergite mainly blue-green. Antennal coloration as described for *pretiosa* (Timb.), but scape more broadly pale on inner side.

Legs having hind coxae as sides of gaster ; otherwise mainly yellow-stramineous, the tarsi, tibiae, hind femora above and mid coxae at extreme base darker.

Male differs as follows : reticulation on frontovertex and mesoscutum rather finer than in female, on sides of face and inter-scrobal prominence about as on frontovertex, on cheeks, scutellum, axillae and mesopleura about as in female. Antennae with fourth ramus very distinctly over-reaching the fifth funicle segment. Fore wings about as in female.

Frontovertex, pronotum and mesoscutum a very dark green with metallic reflections : cheeks, lower parts of face and sides of propodeum mostly a much brighter blue-green : scutellum bronzy, mesopleura and often axillae blue and reddish violet : gaster, middle and sides of propodeum blackish brown with metallic reflections. Antennal colour as described for *pretiosa* (Timb.) male. Legs much as described for female, but the hind femora and tibiae dark, except at base and above.

Holotype ♀. France: Antibes, 1956, *ex Pseudococcus* sp. on *Choisya* (*Benassy*).

Paratypes. France: 4 ♀, 4 ♂ (same data as holotype), 1 ♀, 4 ♂, 1956, *ex Pseudococcus* sp. on *Pittosporum* (*Benassy*).

Holotype and paratypes in Muséum d'Histoire Naturelle, Geneva, paratypes in British Museum (Natural History).

Hungariella brounii (Howard Ms.) (Timberlake), **comb. n.**

(Text-fig. 23)

1929 *Tetracnemus brounii* Timberlake, *Univ. Calif. Publs Ent.* **5** (2) : 6.
1939 *Tetracnemus brounii* Timberlake ; Compere, *Ibidem*, **7** (4) : 60.

Head from above rather strongly but narrowly emarginate anteriorly, about as deeply so behind as in *mediterranea* sp. n. ; relatively less broad than in *pretiosa* (Timb.) ; with eyes not quite reaching occipital margin ; in facial view similar to *pretiosa* (Timb.) but relatively somewhat longer : ocelli relatively small, the lateral ones twice their own diameters from orbital margin. Eyes moderately hairy, just distinctly so × 65. Reticulation on frontovertex more strongly outstanding than in *pretiosa* (Timb.), about as in *peregrina* (Comp.), and on sides of face equally strong : inter-scrobal prominence more weakly reticulate, and cheeks very finely scaly-reticulate.

Antenna with scape and pedicellus about as in *pretiosa* (Timb.) ; with first funicle segment cylindrical, about 2½ times as long as broad ; with remainder of funicle broadening markedly to the club, with second to fourth funicle segments each about three-fifths the length of the first, the fifth distinctly longer (the fourth and fifth subequal in *pretiosa*).

Reticulation on scutellum and axillae less outstanding than on frontovertex but coarser, on mesoscutum as outstanding as on head and still coarser, on mesopleura much weaker and finer.

Fore wings (Text-fig. 23) clear, not infuscate, relatively narrower than in *pretiosa* (Timb.) ; with prestigma considerably thickened ; with marginal vein nearly twice as long as broad ; with speculum not traversing the radius, which is emitted at about the same angle as in *pretiosa* (Timb.).

Head in greater part and mesoscutum colour about as described for *peregrina* (Comp.), but the head often in part violescent : axillae dull bronzy ; scutellum pale brassy green : mesopleura pale brown, with very weak metallic reflections : propodeum pale brown, with metallic reflections rather weak even on sides : gaster usually much darker, with greenish, purplish and brighter reflections. Antennal coloration as described for *pretiosa* (Timb.) but paler, the scape pale stramineous in about basal half to two-thirds.

Legs whitish stramineous : hind coxae pale brown like the mesopleura but darker : tarsi, tibiae, and often mid coxae at base slightly tinged with the same, the tarsi dark at apex.

Male differs as follows : reticulation on frontovertex decidedly finer than in female and on sides of face still finer. Antennae with fourth ramus distinctly over-reaching fifth funicle segment. Sculpture of mesonotal sclerites and mesopleura about as in female. Fore wings relatively a little broader than in female.

Altogether duller coloured than female : head mostly a dull blue-green, with infusions of bronzy : mesoscutum the same, or mostly overspread with bronzy : scutellum a relatively bright bronzy, axillae duller : mesopleura and propodeum rather duller than in female, but gaster about the same. Antennae pale brown, with weak metallic reflections ; with scape pale stramineous in about basal half to two-thirds. Legs stramineous, the following pale brown with weak metallic reflections : hind coxae, mid coxae weakly at base, hind femora except at base and apex, hind tibiae except at base, and all tarsi : mid femora and tibiae just weakly darkened above.

Redescribed from the following material: New Zealand: Nelson, 6 ♀, 5 ♂, 19.iii.1927, *ex Pseudococcus* sp. (*E. S. Gourlay*). These specimens are part of the material which was reared by Mr. Gourlay from mealybug on the "black passion-fruit vine", as he has informed me by letter. Material is to be deposited in the British Museum (Natural History), and in the Cawthron Institute and the Department of Entomology, Nelson, N.Z.

The holotype ♀ and allotype are in the U.S. National Museum, but the paratypes, i.e. the remaining specimens seen by Mr. Timberlake, cannot be traced either as having been retained by him at Riverside or as having been received back by Mr. Gourlay.

Hungariella peregrina (Compere)

1939 *Tetracnemus peregrinus* Compere, *Univ. Calif. Publs Ent.* **7** (4) : 59–61.

Head from above about same shape as *pretiosa* (Timb.) (Text-fig. 15), but with eyes just over-reaching occipital margin ; in side view more strongly narrowed to mouth than in *pretiosa* (Timb.) ; in facial view with cheeks more rounded than in *pretiosa* (Timb.) : lateral ocelli slightly less than their own diameters from orbital margin. Eyes strongly and densely hairy, very distinctly so × 45. Reticulation on head more strongly outstanding than in *pretiosa* (Timb.).

Antenna as described and figured by Compere (1939), notably the scape much less elongate than in *pretiosa* (Timb.) and the first funicle segment hardly longer than broad, shorter than any of the four following segments.

Reticulation on mesoscutum and also scutellum finer than in *pretiosa* (Timb.) : mesopleura much more weakly reticulate than scutellum. Fore wings rather weakly infuscate beyond and before speculum ; with prestigma scarcely thicker than first abscissa of submarginal ; with marginal not nearly twice as long as broad ; with speculum not traversing the radius, which is emitted at a much acuter angle than in *pretiosa* (Timb.).

Differs from *pretiosa* (Timb.) as follows : head, mesoscutum and propodeum a duller, decidedly blue-green with reflections less pronounced : axillae and scutellum duller, something between brassy and bronzy, the scutellum distinctly green at sides : mesopleura pale brown, with weak metallic reflections.

Antennal coloration as described for *pretiosa* (Timb.), but scape often much more broadly pale.

Legs mainly a paler stramineous than in *pretiosa* (Timb.), the hind coxae beneath often also of this colour : hind femora, except broadly at base and narrowly at apex and beneath, usually brown with metallic reflections, and fore femora in part occasionally so (Moroccan specimen).

Male differs as follows : reticulation on head, mesoscutum, scutellum and mesopleura about as in female. Antennae with fourth ramus very distinctly over-reaching fifth funicle segment. Fore wings relatively distinctly broader ; with postmarginal very reduced.

Green coloration much less prominent than in female, usually obvious on sides of face, but often indistinct on frontovertex and mesoscutum. Antennal colour as described for *pretiosa* (Timb.) male. Leg colour much as described for the male of *pretiosa* (Timb.) but the stramineous coloration paler, and the hind femora not markedly pale beneath.

Redescribed from the following material: BRAZIL: Rio de Janeiro, 1 ♀, 3 ♂, 10.ix.1934, *ex Pseudococcus longispinus* (Targ.), (*H. Compere*) (paratypes). U.S.A.: California, San Diego, Balboa Park, 1 ♀, 3.i.1940, *ex Ps. longispinus* (Targ.) on *Dracaena* (*S. E. Flanders*); Fontana, 5 ♀, 1 ♂, 1953, *ex Ps. longispinus* (Targ.), Commonwealth Inst. of Biological Control. SOUTH AFRICA: Cape Town, 2 ♀, 2 ♂, 24.vii–13.viii.1924, ex "black scale" (*E. W. Rust*) (reared at Riverside); Elsenburg, 3 ♀, 2 ♂, 1926, ex mealybug on pear (*F. W. Petty*); Camps Bay, 2 ♀, 1 ♂, ex Coccid on Oleander (*H. Compere*); Malmesbury, 17 ♂, 7.i.1937, *ex Pseudococcus fragilis* Brain (*H. Compere*); Natal, Durban, 1 ♂, viii.1947, ex mealybug material (*H. Compere*);

Transvaal, Pretoria, 1 ♀, 1 ♂, xi.1954, ex scale infested plant material (*E. G. C. Bedford*). ST. HELENA: Thomson's Wood, 1 ♀, 29.vii.1959, "on gumwood" (*C. R. Wallace*). MOROCCO: 1 ♀, 5.vi.1953, "*ex* B 518", "Vanden Bosch Skipper". FRANCE: Menton, 1 ♀, 2 ♂, iv.1952, *ex Ps. longispinus* (Targ.) on *Chamaerops humilis* (L.) (Palmae), 1 ♀, 3 ♂, vi.1952, *ex Ps. longispinus* (Targ.) on *Pittosporum tobira* Ait. (*J. Ghesquière*). Material in Citrus Experiment Station, Riverside, in Department of Agriculture, Pretoria, in collection of Monsieur J. Ghesquière, in Národní Museum, Prague, and in British Museum (Natural History).

Hungariella coffeicola sp. n.

(Text-figs. 17–18, 24)

Head from above (Text-fig. 17) much longer than in *pretiosa* (Timb.); strongly emarginate anteriorly and rather strongly so posteriorly; with eyes distinctly over-reaching occipital margin; in facial view (Text-fig. 18) with cheeks more rounded than in *pretiosa* (Timb.); lateral ocelli about their own diameters from orbital margin. Eyes weakly hairy (× 100). Frontovertex much more finely reticulate than in *pretiosa* (Timb.): sides of face, cheeks and interscrobal prominence very finely scaly-reticulate.

Antenna with scape about as in *peregrina* (Comp.), with first funicle segment not quite twice as long as broad, longer than any of the four following, which are more strongly expanded from base to apex than in *pretiosa* and *peregrina*.

Reticulation on mesoscutum and scutellum about as on frontovertex; that on mesopleura decidedly finer but still sharp and outstanding.

Fore wings (Text-fig. 24) moderately infuscate before speculum; with prestigma considerably thickened, bearing three hairs that are about as strong as those on first abscissa of submarginal; with marginal less than twice as long as broad, bearing two hairs that also are especially conspicuous; with radius short and stout, having a distinct but not sharp uncus.

Colour of head, thorax, propodeum and gaster as described for *pretiosa* (Timb.). Antennal coloration as described for *peregrina* (Comp.). Legs having the following coloured as sides of gaster but paler: hind coxae except at extreme apex, mid coxae in about basal three-fifths, and hind femora except at base and apex: otherwise mainly pale stramineous, the fore and mid femora at apex, tibiae and tarsi tending to rufo-testaceous, the mid and hind tarsi infuscate at apex: sometimes having fore and mid femora and hind tibiae weakly infuscate in part.

Male differs as follows: reticulation on frontovertex slightly coarser than in female but much sharper and more outstanding; on sides of face about the same as on frontovertex but on cheeks much finer. Antennae with fourth ramus not so distinctly over-reaching fifth funicle segment as in *peregrina* (Comp.). Reticulation on thorax about as in female. Fore wings relatively a little broader than in female.

Differs from female as follows: frontovertex and mesoscutum a duller brassy green or blue-green with more bronzy reflections; face and cheeks almost blue; scutellum a duller bronzy: in contrast with *pretiosa* (Timb.) the scrobal impression is bright bronzy as in the female. Antennae pale brown, with weak metallic reflections: scape sometimes wholly flavo-testaceous, but more often in large part darkened. Leg colour much as described for female, but the hind tibiae and tarsi often more strongly and extensively infuscate.

Holotype ♀. UGANDA: Bukalasa, 20.iii.1938, *ex Planococcus kenyae* (Le Pelley) on *Coffea robusta* (*A. R. Melville*).

Paratypes. UGANDA: 5 ♀, 4 ♂ (same data as holotype), 8 ♀, same data but 2.v.1928; Entebbe, 1 ♀, 16.iii.1938, Mbarara, 1 ♀, vi.1938, Toro, 10 ♀, 4 ♂, 2.viii.1928, *ex Pl. kenyae* on *C. robusta* (*A. R. Melville*); Kimiriri, 2 ♀, 4 ♂, ix.1953, *ex Pseudococcus* sp. (*A. A. Talbot*). KENYA: Nairobi, National Agricultural Laboratory, 5 ♀, 4 ♂, 1938, propagated on *Pl. kenyae* (*R. Le Pelley*).

Holotype in British Museum (Natural History); paratypes in British Museum (Natural History), in U.S. National Museum, in Citrus Experiment Station, Riverside, in Australian National Collection, in Museum d'Histoire Naturelle, Geneva, in Národní Museum, Prague, in Coryndon Museum, Nairobi, and in Department of Agriculture, Pretoria.

Additional material studied. UGANDA: Kangundo, 5 ♂, vi.1955, *ex Planococcus citri* (Risso) on *Coffea arabica* (*D. J. McCrae*). Mr. McCrae wrote in a letter dated 28th January, 1958 that the form reared from *P. citri* would attack *P. kenyae* but that no progeny were reared. No female specimen of this rearing was received in London; the males do not appear to me to differ significantly from specimens reared from *P. kenyae*, in particular, the marginal vein bears the two conspicuous hairs.

Hungariella indica (Ramakrishna Ayyar), **comb. n.**

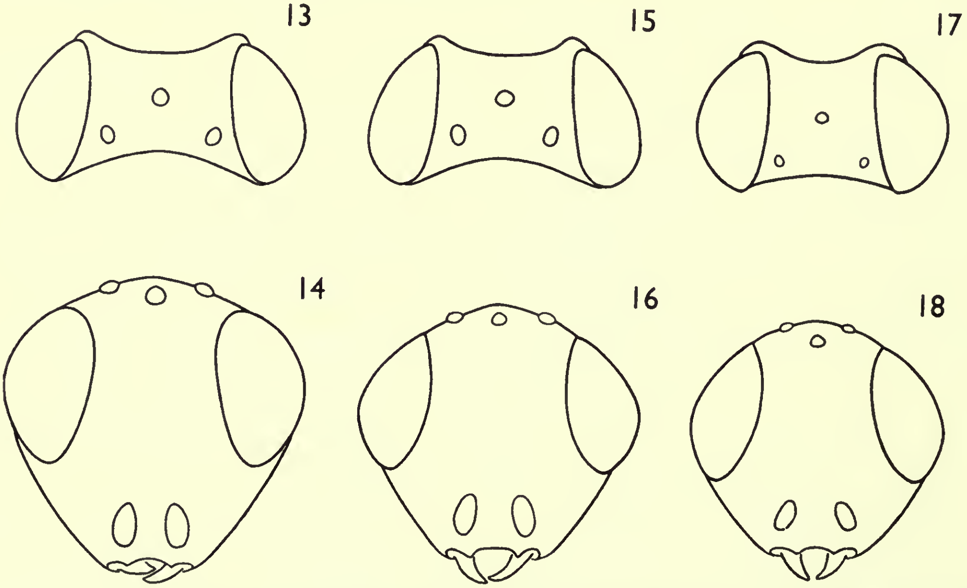
(Text-figs. 19–20)

1929 *Tetracnemus indicus* Ramakrishna Ayyar, *Rec. Indian Mus.* **34** : 287–8.

Head collapsed in all specimens available for study, but apparently shaped about as in *coffeicola* sp. n. (Text-figs. 17–18). Lateral ocelli about their own diameters from orbital margin. Eyes weakly hairy (× 100). Frontovertex reticulate about as in *pretiosa* but a little finer : sides of face and inter-scrobal prominence not much more finely sculptured than frontovertex.

Antenna with scape and first four funicle segments about as in *coffeicola* sp. n., the fifth funicle very much larger, more resembling a club segment (Text-fig. 20).

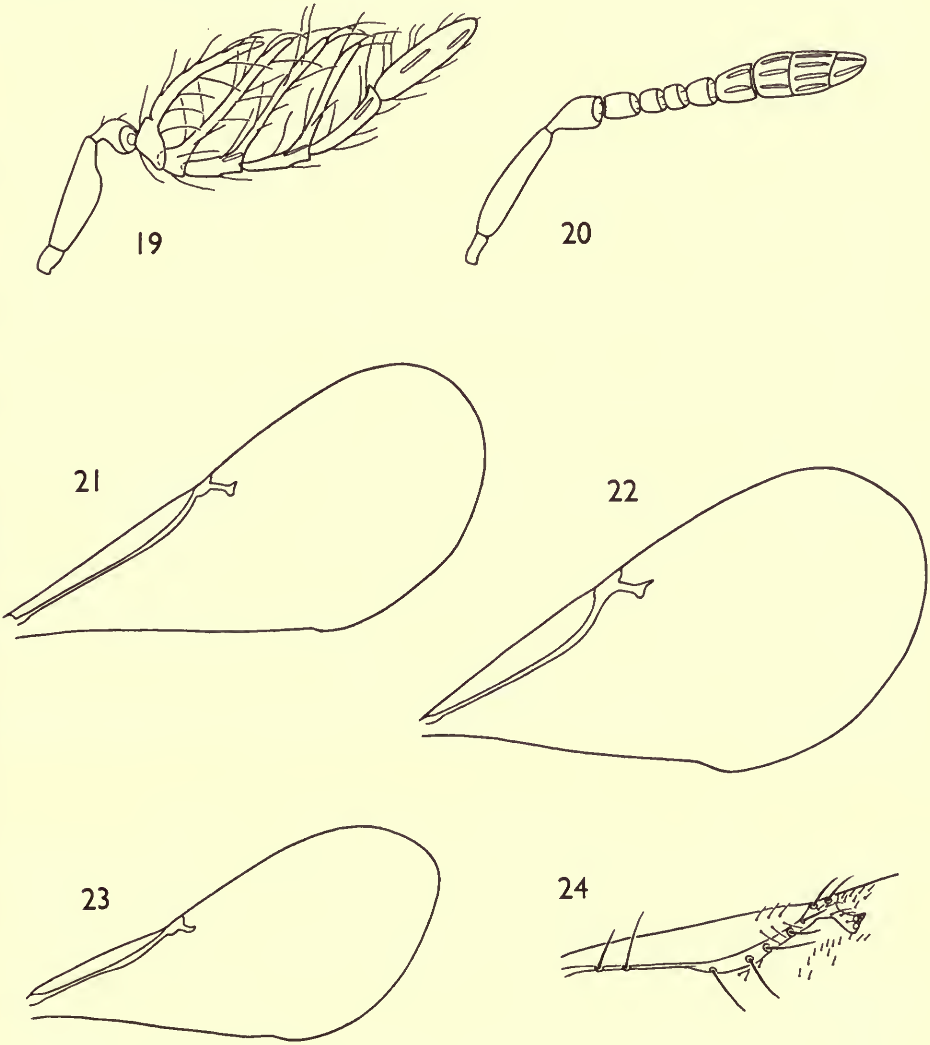
Reticulation of mesoscutum, scutellum and mesopleura about as coarse as on frontovertex but much less outstanding, the surfaces more shining.



FIGS. 13–18. *Hungariella* species, females. 13, *H. mediterranea* sp. n., head, seen from above ; 14, *H. piceae* Erdös, head in facial view ; 15, *H. pretiosa* (Timb.), head, seen from above ; 16, the same in facial view ; 17, *H. coffeicola* sp. n., head, seen from above ; 18, the same, in facial view.

Fore wings rather weakly infuscate beyond and before speculum ; with prestigma not much thickened ; with marginal about twice as long as broad ; with radius emitted about as in *peregrina* (Comp.).

Head for the most part, mesoscutum, scutellum, propodeum and first large tergite a rather bright brassy green : occiput, pronotum, mesopleura, sternal regions and most of gaster pale brown, with weak metallic reflections : antennae having scape wholly stramineous ; having pedicellus and flagellum pale brown, with multicoloured metallic reflections. Legs with hind coxae above coloured as mesopleura but paler : otherwise pale testaceous to dull stramineous, the segments tending to rufous at their apices.



FIGS. 19–24. *Hungariella* species. 19–20. *H. indica* (Ram. Ayyar), right antenna, in dextro-lateral view, of 19, male and 20, female. 21–23. Right fore wing of female of 21, *H. pretiosa* (Timb.) ; 22, *H. mediterranea* sp. n. ; 23, *H. brounii* (Timb.). 24, Part of right fore wing of female, on larger scale, of *H. coffeicola* sp. n.

Male differs as follows: reticulation on frontovertex, sides of face and inter-scrobal prominence about as in female. Antennae with fourth ramus very distinctly over-reaching the fifth funicle segment. Sculpture of thorax as described for female, but the surfaces not so shining. Fore wings relatively markedly broader, and with marginal vein stouter.

Not much green coloration on first large tergite, and scutellum mainly bronzy: green parts otherwise as in female, the green, however, much darker, but less dark than in male *pretiosa* (Timb.). Antennal colour as described for female. Leg colour much as described for female, but the hind femora at apex and hind tarsi more darkened.

Redescribed from the following: INDIA: Madras, Coimbatore, 3 ♂, viii.1924, on *Planococcus citri* (Risso), (*T.V. Ramakrishna Ayyar*) (holotype and paratypes); Coimbatore, 5 ♀, 3 ♂, 25.viii.1937, *ex Planococcus* sp. ?*lilacinus* (Ckll.) (*R.H. Le Pelley*).

Through the kindness of Dr. S. Pradhan I have been able to examine the type of *Tetracnemus indicus* Ramakrishna Ayyar from the Zoological Survey of India, Calcutta, and I am satisfied that it is the same as the species later reared at Coimbatore by R. H. Le Pelley. There are certain obscurities in the original description. The type is mounted on a slide with the head detached. The artist has evidently drawn the text-figure from the facial view but has so altered the focus of the microscope that the base of the antennal scape is not shown as being above the lower face and genae. The author has described the scape as projecting far beyond the anterior margin of the head, which evidently applies to the same view in which these structures are seen: the scape at rest does not reach the top of the head, in fact the length of scape and radicle is decidedly less than the distance from the base of the radicle to the median ocellus, as is shown accurately in the figure. The petiole of the first funicle segment does appear, in the slide mount, to consist of two rings.

Two other male specimens, mounted on slides and labelled in the same handwriting with the same data were among material on loan from Dr. Compere. These were probably among material given to him when he visited Dr. Ramakrishna Ayyar at Coimbatore on 28th June, 1932, and are evidently the two paratypes. Compere has generously agreed that they may be deposited in the British Museum (Natural History) and the U.S. National Museum respectively.

Further material in Zoological Survey of India, Calcutta, at Citrus Experiment Station, Riverside, and in British Museum (Natural History).

KEY TO SPECIES OF *HUNGARIELLA* Erdös: FEMALES

1 Of more slender and elongate build than its known congeners, with gaster about equal to combined length of head, thorax and propodeum: antennae decidedly elongate and slender, with scape reaching top of head, with flagellum not sharply clavate, and with first funicle segment quite four times as long as broad: pedicellus almost wholly stramineous and flagellum conspicuously so at base: Europe . **piceae** Erdös

Less slenderly built, with gaster much less than combined length of head, thorax and propodeum: antennae much stouter, with scape not reaching top of head, with flagellum more or less sharply clavate, and with first funicle segment plainly less than four times as long as broad: pedicellus only stramineous at apex and beneath, and funicle not pale at base 2

2 First funicle segment 2½ to 3½ times as long as broad [a compact group of species separable also on individual characters from those in alternate] 3

First funicle segment plainly less than twice as long as broad 6

3 First funicle segment 3½ times as long as broad: head, in facial view, even longer than in *piceae* Erdös (Text-fig. 14): hind femora almost wholly brown: Europe **spilococci** (Ferrière)

First funicle segment about 2½ times as long as broad: head, in facial view, much less elongate (e.g. Text-fig. 16): hind femora mostly yellow-stramineous . . 4

4 Antennal funicle strongly expanded towards the club, the fifth segment distinctly longer as well as broader than the fourth and thus appearing transitional: ocelli relatively small, the lateral ones twice their own diameters from orbital margin: fore wings hyaline, relatively narrow (Text-fig. 23): scutellum pale brassy green: mesopleura pale brown, with very weak metallic reflections: New Zealand **brounii** (Howard MS.) (Timberlake)

Antennal funicle slightly expanded towards the club, the fifth segment subequal in length to the fourth and not appearing transitional: lateral ocelli about their own diameters from orbital margin: fore wings at least moderately infuscate, broader: scutellum and mesopleura more or less bronzy or reddish violet, the metallic colour on the mesopleura strong 5

5 Head from above (Text-fig. 15): eyes moderately hairy, distinctly so × 65: fore wings moderately broad, with uncus normal (Text-fig. 21): distribution widespread . . . . **pretiosa** (Timberlake)

Head from above (Text-fig. 13) relatively broad and less deeply emarginate: eyes strongly and rather densely hairy, very distinctly so × 45: fore wings still broader, the radius having a long, sharp uncus (Text-fig. 22): Mediterranean area **mediterranea** sp. n.

6 First funicle segment hardly longer than broad, shorter than any of the following (see Compere, 1939, fig. 2): head about same shape as in *pretiosa* Timb. (Text-fig. 15): eyes strongly and densely hairy, very distinctly so × 45: frontovertex and mesoscutum blue-green, duller: distribution widespread . . **peregrina** (Compere)

First funicle segment nearly twice as long as broad, longer than any of the three following: head from above much longer (e.g. Text-fig. 17): eyes weakly hairy (× 100): frontovertex and mesoscutum medium green to bright brassy green . 7

7 Fifth funicle segment about as long as the first and much larger than any of the preceding, more like a club segment (Text-fig. 20): marginal vein not bearing two very conspicuous hairs: scape wholly stramineous: hind femora pale testaceous, rufous towards apex: southern India . . . **indica** (Ramakrishna Ayyar)

Fifth funicle segment decidedly shorter than first and not much larger than fourth: marginal vein bearing two very conspicuous hairs (Text-fig. 24): scape pale brown on about apical half: hind femora, except at base and apex, brownish black with metallic reflections: East Africa . . . . **coffeicola** sp. n.

Key to Species of *HUNGARIELLA* Erdös: Males

1 Antennae with fourth ramus hardly or only a little over-reaching the fifth funicle segment: species known from northern and middle Europe 2

Antennae with fourth ramus very distinctly over-reaching the fifth funicle segment: Mediterranean region and extra-European 3

2 Antennal scape pale in about basal two-thirds: eyes less strongly hairy (see description) . . . . **piceae** Erdös

Antennal scape pale at extreme base only: eyes more strongly hairy **spilococci** (Ferrière)

3 Antennal scape pale at extreme base only: radius more slender, and emitted at an acuter angle . . . . cf. **spilococci** (Ferrière)

Antennal scape flavo-testaceous in about basal two-thirds: radius stouter, and emitted at a less acute angle 4

4 Antennal club about one-fifth longer than scape without radicle: eyes distinctly hairy × 65 . . . . **pretiosa** (Timberlake)

Antennal club about equal in length to scape without radicle 5

5 Ocelli relatively small, the lateral ones twice their own diameters from orbital margin: fore wings relatively narrow, though less narrow than in female of same species: eyes moderately hairy, just distinctly so × 65: mesopleura rather pale, with weak metallic reflections: New Zealand . . . . ***brounii*** (Howard MS.) (Timberlake)

Ocelli relatively larger, the lateral ones about or even less than their own diameters from orbital margin: fore wings relatively broader: eyes decidedly either more strongly or more weakly hairy: mesopleura darker 6

6 Eyes strongly hairy, very distinctly so × 45: larger species 7

Eyes weakly hairy (× 100): smaller species 8

7 Reticulation of frontovertex finer, less regular and outstanding: eyes less densely hairy: fore wings with prestigma markedly thickened, and with radius having a long, sharp uncus: antennal scape and club relatively longer: scrobal impressions bright blue-green: mesopleura blue and reddish violet: Mediterranean area ***mediterranea*** sp. n.

Reticulation of frontovertex coarser, more regular and outstanding: eyes decidedly more densely hairy than in any other known species: fore wings with prestigma scarcely thicker than first abscissa of submarginal, and with uncus of radius normal: antennal scape and club relatively shorter: scrobal impressions bronzy: distribution widespread including Mediterranean area . . . . ***peregrina*** (Compere)

8 Fore wings with marginal vein nearly twice as long as broad, not bearing two especially conspicuous hairs: scrobal impressions green: hind femora dull stramineous, weakly infuscate in about apical third . . . ***indica*** (Ramakrishna Ayyar)

Fore wings with marginal vein not nearly twice as long as broad, bearing two very conspicuous hairs (see Text-fig. 24): scrobal impressions bronzy: hind femora, except at base and apex, brownish black with metallic reflections . . ***coffeicola*** sp. n.

ERICYDNUS Walker, 1837

1837 *Ericydnus* (Haliday MS.) Walker, *Ent. Mag.* **4** : 363.
1875 *Ericydnus* Walker ; Thomson, *Hymenoptera Scandinaviae* **4** : 123–4.
1876 *Ericydnus* Walker ; Mayr, *Verh. zool.-bot. Ges. Wien* **25** : 762–3.
1909 *Ericydnus* Walker ; Schmiedeknecht, *Genera Insectorum* **97** : 195–8, 203.
1921 *Ericydnus* Walker ; Mercet, *Trab. Mus. nac. Cienc. nat., Madr.*: 60–1, 73–5, 158–9.
1952 *Ericydnus* Walker ; Nikol'skaya, *Opred. Faune SSSR* **44** : 324–6, 356.
1953 *Ericydnus* Walker ; Ferrière, *Mitt. schweiz. ent. Ges.* **26** : 6–20.
1964 *Ericydnus* Walker ; Peck, Bouček & Hoffer, *Mem. ent. Soc. Canada* **34** : 64–77.

Elongate, slender Encyrtidae, with antennae and legs of female decidedly elongate : moderately strongly sclerotized, so that in death the head is not especially liable to collapse or distortion as it is in some allied genera.

Head from above reniform (Text-figs. 25–26), in this view not or but little emarginate anteriorly on account of the scrobal impression, rather strongly to strongly emarginate posteriorly : eyes rather sparsely but always distinctly pubescent, generally distinctly so × 25, nearly but never quite reaching the posterior margin, which is sharp and distinctly raised : frontovertex broader than an eye, bearing punctures of no more than moderate depth, that commonly are separated by about their own diameters : lateral ocelli close to eyes : toruli obovate, separated from mouth by less than their own length : common scrobal impression extending less than half way up orbits. Mandibles greatly narrowed from base, bidentate, with upper tooth the longer. Antennae of female not strongly clavate : scape elongate, not dilated : funicle 6-segmented, the segments increasing gradually in breadth : club 3-segmented, the first segment a little broader than the sixth funicle. Thorax rather flattened above, not deep dorsoventrally : axillae contiguous, with a short longitudinal suture between them[1] : scutellum elongate except in very short-winged forms, having a weak to strong laminate apical margin (Text-figs. 27–29).

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[1] In very short-winged specimens the axillae may appear separate owing to the hind margin of the mesoscutum, when bent back, overlying the common suture.

Propodeum with a pair of transverse keels, weakly or strongly developed, which bend round at sides to near apices of the longitudinal keels which run back from the inner side of the spiracles. Fore wings (Text-figs. 30–34) of normal breadth to narrow : marginal vein several times as long as broad, and postmarginal at least about as long as marginal, usually considerably longer : brachypterous forms frequent.

The species of this genus have been very much confused. Thanks, to a large extent, to the loan of really extensive material by Drs. Z. Bouček and A. Hoffer, it has proved possible to achieve a satisfactory separation of the macropterous forms: in Europe there are here recognized six species, of which one may be a mutant form. The micropterous forms are more difficult to separate since they are, to a greater or lesser extent, more weakly characterized: the head shape, proportions of antennal segments, and the propodeum are particularly affected.

Precise data of the Czechoslovak specimens are not included here, partly because the material is so extensive, and partly because I understand it to be the intention of Dr. Hoffer to make a more intensive study of the fauna of his own country in due course.

Ericydnus ventralis (Dalman)

(Text-figs. 25, 30)

1820 *Encyrtus longicornis* var. *ventralis* Dalman, *K. svenska Vetensk-Akad. Handl.* **41** : 166.
1837 *Ericydnus paludatus* (Haliday MS.) Walker, *Ent. Mag.* **4** : 363–4.
1876 *Ericydnus ventralis* Dalman ; Mayr, *Verh. zool.-bot. Ges. Wien* **25** : 763–5 (*non* var. *biplagiatus*).
1921 *Ericydnus dichrous* Mercet (♀ *non* ♂), *Trab. Mus. nac. Cienc. nat., Madr.*: 159, 164–7.
1957 *Ericydnus dichrous* Mercet ; Erdös, *Acta zool. hung.* **3** : 21–3.
1966 *Ericydnus ventralis* Dalman ; Kerrich, *Opusc. ent.* **31** : 119.

Head, seen from above (Text-fig. 25) narrow and rather elongate, very weakly rounded or broadly emarginate in front, having occiput extending back so that it is clearly visible behind the occipital margin from above, in facial view with cheeks well rounded. Frontovertex very finely reticulate ; with piliferous punctures of less than moderate size, nearly all separated by more than their own diameters, and the orbitals not very small, separated by about their own diameters : face and cheeks very finely scaly-reticulate. Eyes rather densely hairy.

Antenna with scape nearly reaching the median ocellus ; with pedicellus about twice as long as broad and a little shorter than the first funicle segment : funicle broadening rather gradually, having first segment about twice as long as broad and a little shorter than the second or third, with the following decreasing in length gradually : club about equal to combined length of segments four and five.

Pronotum, mesoscutum, axillae and scutellum very finely and weakly reticulate and densely beset with weak piliferous punctures that are separated, some by more but many by less than their own diameters. Scutellum sharply margined, very weakly laminate at apex, little raised above metathorax. Mesopleura behind scaly-reticulate about as on cheeks, in front very finely alutaceous. Propodeum on sides with reticulation about as on scutellum ; having a partly reticulate median area bordered by or containing fine longitudinal keels, often a median keel, and distinctly raised at mid base ; elsewhere very finely alutaceous and shining, with transverse keels rather weak.

Wings relatively narrow, as in Text-fig. 30 or even considerably narrower, with postmarginal vein extending relatively far beyond uncus. In this species only slight wing reduction is known, and this condition is scarce.

Male antenna with scape reaching a little beyond the median ocellus ; with pedicellus relatively shorter than in female, much shorter than the first funicle segment ; with flagellum almost filiform : first funicle segment about twice as long as broad, second a little longer than first and third a little longer than second, the remainder about equal : club less than the combined length of the two preceding segments.

Frontovertex normally in greater part and inter-scrobal prominence red-violet, though frontovertex broadly blue-green along hind margin and sometimes more extensively : scrobes, temples and cheeks bronzy with bright reflection. Pronotum almost entirely dull blue-green. Mesoscutum, axillae, scutellum and propodeum varying from almost entirely dull blue-green, usually with a little testaceous colouring just above the tegulae, to (in a Spanish and, more curiously, a Norwegian specimen) chrome-yellow, with little dark colouring except on upper surface of propodeum : light red-violet reflection is widespread. Post-spiracular sclerite and mesopleura varying from undarkened chrome-yellow (in a Spanish specimen) to dull testaceous, the mesopleura almost wholly darkened. Gaster varying from bright testaceous, moderately darkened in middle above (Spanish specimen) to dull testaceous, mostly darkened. Antennae brownish black, with weak metallic reflections ; having scape often beneath and sometimes almost wholly, pedicellus at apex and beneath, and sometimes basal segments of funicle, more or less pale brown. Legs yellow-testaceous, with the following darkened : tarsal apices, hind femora, at least in part, and tibiae and tarsi above, and often, especially in male, the fore and mid femora and tibiae in part.

Dalman described this species, recording it as having been taken by Boheman in the Swedish province of Småland.

Six specimens stand in the Boheman collection as *ventralis* Dalman: all were taken by Boheman in Småland with the exception of the fourth, which was captured in the Stockholm area, and the second, which seems to be a Zetterstedt specimen.

I designate the third specimen in the series as LECTOTYPE: this specimen is also considered by Dr. M. de V. Graham to agree best with the original description. All specimens in the series, except the first, which is now determined as *sipylus* Walk., belong to this species.

The first, second, third and fifth specimens in the series are marked as having been seen by Thomson. In the Thomson collection there are specimens of this species standing in the series named as both *longicornis* and *ventralis*.

I have studied the type of *paludatus* Walker, which is in the Haliday collection and is a male from Portmarnock with very slightly reduced wings.

I believe Mayr's diagnosis (1876) to refer to this species.

I have not seen the female holotype of *dichrous* Mercet but feel confident of the identity of the insect described. The male from the same locality, associated by Mercet and illustrated by Professor Ceballos in his work, I have been able to study: I have not been able to identify this micropterous specimen with confidence, but place it provisionally as a form of the species now determined as *strigosus* Nees. The lamina at apex of the scutellum is more strongly developed than in any macropterous male specimen of *ventralis* Dalm. that I have been able to study.

Material studied. IRELAND: Co. Down, Portmarnock, 1 ♂, type of *paludatus* (Haliday ms.) Walker. ENGLAND: unlocalized, 2 ♀, 2 ♂, Dale coll.; Oxon., Lewknor, 2 ♀, 2.vi.1957, Otmoor, 2 ♂, 5.vi.1958, Bald Hill, 1 ♀, 3 ♂, vi.1957, Berks., Bagley Wood, 1 ♀, 31.vii.1954, Wytham Wood, 1 ♂, 17.viii.1952, 1 ♂, 5.vi.1958, 2 ♀, 8.vii.1959 (*M. de V. Graham* or *M. F. Claridge*); Berks., Silwood Park, 1 ♀, 22.v.1950, on grass (*O. W. Richards*); Cambridge, 1 ♀, Hope–Westwood coll. NORWAY: Jaeren Orre, 1 ♀, 11.vii.1953, (*Ardö*). SWEDEN: Skåne, Småland and Stockholm district, 11 specimens including lectotype, Dalman and Thomson colls.; Närke, Örebro district, 1 ex., 21.v–4.vii (*A. Jansson*). SPAIN: Fuenterrabia, 1 ♀, 14.viii. 1919 (*G. Mercet*). GERMANY: Aachen, 6 ♀, coll. Förster. AUSTRIA: 1 ♀, 1 ♂, ? Ruschka. CZECHOSLOVAKIA: 59 ♀, 37 ♂, iv.–17.ix (*Z. Bouček* and *A. Hoffer* colls.). HUNGARY: Tasnád, 1 ♀, Vácz. Tudosdomb, 1 ♂, 6.vii.1930, (*J. Biró*), Tompa, 2 ♂, 16.v, 2 ♀, 25.v.1950, Kelebia, 2 ♀, 10.vi.1949, 2 ♀, 19.v.1950 (*J. Erdös*) (mostly det. Erdös as *dichrous* Merc.). U.S.S.R., Tbilisi, Lisči, 2 ♀ vi.1957 (*A. Hoffer* and *J. Dlabola*).

Ericydnus caudatus Erdös

1957 *Ericydnus caudatus* Erdös, *Acta Zool. hung.* **3** : 23–4.

Differs from *ventralis* Dalman as follows : ovipositor sheaths projecting by about two-fifths length of gaster : microsculpture on frontovertex and dorsum of thorax decidedly more outstanding.

So exceeding like *ventralis* Dalman in all other respects that I can only regard it as a mutant form that is perhaps evolving into a distinct species through the development of different oviposition habits.

Material studied. CZECHOSLOVAKIA: 9 ♀, 2 ♂, iv.–25.viii, (*Z. Bouček* and *A. Hoffer* colls.). HUNGARY: Tompa, 2 ♀, 16, 1 ♀, 30.vi.1950, 1 ♀, 1 ♂, 7.vii.1951, (*J. Erdös*) (cotypes).

Ericydnus japonicus (Tachikawa)

1963 *Grandoriella japonica* Tachikawa, *Mem. Ehime Univ.* VI **9** (1) : 58–61, figs. 11–12.
1966 *Ericydnus japonicus* Tachikawa ; Kerrich, *Opusc. ent.* **31** : 119.

The following redescription was made from a single female paratype kindly sent on loan by Professor Tachikawa, by direct comparison with the European species of *Ericydnus*, especially *E. ventralis* Dalman.

Head, seen from above, resembling that of *ventralis* Dalman in being relatively narrow and rather elongate, but with eyes nearly reaching back of head, and not having the occiput visible behind the occipital margin : in facial view more elongate and with cheeks little rounded. Frontovertex with reticulate microsculpture relatively coarse and sharp, though less outstanding than in *caudatus* Erdös ; with piliferous punctures, except in inter-ocellar area, relatively small and sparse, the orbitals not small but also sparse, separated by much more than their own diameters : cheeks finely striate-reticulate. Eyes rather coarsely and sparsely hairy.

Antenna (see description and figure of Tachikawa (1963)) with scape relatively elongate, slightly over-reaching the median ocellus, and with pedicellus (according to Tachikawa's figure) decidedly but not greatly shorter than the first funicle segment (15 : 17).

Pronotum, mesoscutum, axillae and scutellum very finely and weakly reticulate, sparsely beset with weak piliferous punctures that mostly are separated by much more than their own diameters. Scutellum sharply margined, very weakly laminate at apex, little raised above metathorax. Mesopleura extremely finely alutaceous in front, weakly reticulate behind. Propodeum on sides weakly reticulate, a little finer than on hinder part of mesopleura, above finely alutaceous, with a scarcely defined median area that is not markedly raised at mid base : keels running back from inner side of spiracles developed but difficult to see.

Fore wings as described and figured for *ventralis* Dalman, but the radial and postmarginal relatively longer (see Tachikawa's illustrations).

Frontovertex a deep blue-green behind, merging to strong red-violet just above the interscrobal prominence ; the latter again deep blue-green, together with areas to the side of it and the mouth region : cheeks dull bronzy. Pronotum, except at sides below, dull green with bright reflection. Remainder of thorax and abdomen bright testaceous, the mesoscutum having weak red-violet reflection : lateral areas of metanotum, and gaster in large part above and at sides, blackish with weak green reflection. Mandibles pale testaceous, darkened at apices. Antennae with scape and pedicellus bright testaceous, the latter considerably darkened above : flagellum (according to original description) black. Legs bright testaceous, with fore and mid tarsi somewhat darkened, and hind tibiae and tarsi mostly blackish.

Ericydnus strigosus (Nees)

(Text-figs. 28, 31)

Ericydnus longicornis auctt. plur. (*non* Dalman, 1820).

1834 *Encyrtus strigosus* Nees ab Esenbeck, *Hymenopterorum Ichneumonibus affinium Monographiae* **2** : 227–8.

1837 *Ericydnus strigosus* (Nees) Walker, *Ent. Mag.* **4** : 334.

1872 *Metallon atriceps* Walker, *Notes on Chalcidiae* **7** : 115–6.

1876 *Ericydnus longicornis* Dalman ; Mayr, *Verh. zool.-bot. Ges. Wien* **25** : 763–4 [Misidentification].

1876 *Ericydnus apterogenes* (Förster MS.) Mayr, *Ibidem*, **25** : 763–4.

1921 ? *Ericydnus dichrous* Mercet ♂ (*non* ♀), *Trab. Mus. nac. Cienc. nat., Madr.*: 159–60, 165–7, fig. 50.

1966 *Ericydnus strigosus* (Nees) ; Kerrich, *Opusc. ent.* **31** : 119.

Head, seen from above, rather narrow (i.e. narrower than in macropterous forms of *sipylus* Walk.) ; in facial view with cheeks slightly to moderately rounded. Frontovertex with reticulate microsculpture fine to very fine ; with piliferous punctures within and beside ocellar area mostly separated by less than their own diameters, those before median ocellus much sparser but not absent from the median area, and with orbitals not very small : face and cheeks very finely scaly-reticulate. Eyes moderately densely hairy, distinctly so × 25.

Antenna with scape not reaching median ocellus ; with pedicellus nearly twice as long as broad, and about equal in length to first segment : funicle broadening rather gradually, with segments gradually decreasing in length, the first about one and a half times as long as broad, the sixth almost as broad as long : club distinctly more than combined length of the two preceding segments.

Pronotum, mesoscutum, axillae and scutellum with reticulate microsculpture fine, beset with moderate piliferous punctures that are not very superficial and mostly are separated by about their own diameters. Scutellum (Text-fig. 28) relatively narrow, dorsally almost flat, strongly laminate at apex. Mesopleura rather strongly scaly-reticulate, often quite coarsely so behind. Propodeum (Text-fig. 28) reticulate on sides, and with a reticulate median area which sometimes contains a strong median keel ; elsewhere very finely alutaceous and shining, with transverse keels rather weak to rather strong.

Fore wings (Text-fig. 31) moderately narrow.

In this species there is a considerable range of microptery, from forms with fore wings hardly reaching apex of propodeum to others with fore wings covering the gaster for about two-thirds its length. Micropterous are much less frequently found than macropterous forms.

Male antennae with scape reaching about to median ocellus ; with pedicellus twice as long as broad or less, decidedly shorter than first funicle segment ; with flagellum longer than that of female ; funicle almost filiform, showing considerable intra-specific variation in proportions of the individual segments, but the segments gradually increasing in length : club about equal to combined length of the two preceding segments, tapering strongly to apex.

Coloration in middle European latitudes—frontovertex, inter-scrobal prominence usually, pronotum above, mesoscutum above, axillae, scutellum and sides of propodeum a rather dark green, with reddish violet and bronzy reflections in very varying proportion : colour from frontovertex merging through peacock-blue, which is seen also on inter-scrobal prominence, to the upper face which usually is mostly reddish violet ; lower face, cheeks, temples, occiput and propleura brownish black with indeterminate metallic coloured reflections of moderate strength : remainder of thorax, propodeum above and gaster brownish black (faded to medium brown in old specimens), with mostly weak and indeterminate metallic reflections, but the gaster above often determinately dark green in part. Male gaster generally largely pale brown at base. Mandibles pale brown, darker at apices. Antennae brownish black, the scape and pedicellus with faint dark green reflections. Legs dull testaceous, to a greater or lesser extent darkened more especially on hind legs, the fore coxae usually only darkened at extreme base though sometimes much more extensively.

Coloration in Madeira—head a decidedly brighter green, with duller reflections little in evidence : thorax and abdomen for the most part chrome-yellow : mesopleura except in front, and propodeum between spiracles and median area, blackish with metallic reflections : gaster above in about apical half dark green. Antennae with scape and pedicellus usually paler. Legs bright testaceous, with only the tarsal apices more than slightly darkened.

The main collection of Nees ab Esenbeck is known to have been destroyed. Three specimens of this species, two female and one male, stand as *strigosus* Nees in the Walker collection, and I accept the interpretation of Walker as first reviser. Further, although Mayr (1875) stated that Förster also determined another species as *strigosus*, the only two specimens now in the Vienna museum labelled by Förster as *strigosus* belong to this species.

A single mount in the Vienna museum is labelled " Er. apterogenes Förster, type " and also "Aachen ". It bears five very small pins, from one of which the specimen is missing. The four remaining specimens I determine as brachypterous males of *strigosus* Nees: one of these, as indicated by my own label, I designate as LECTOTYPE.

Of Spanish material determined by Mercet as *longicornis* Dalm., I have seen one female and one male of this species, and one female of a species only subsequently recognized as distinct.

In the British Museum collection there have stood as *atriceps* Walker a macropterous male, and one macropterous and five brachypterous females. The macropterous female bears the green Walker type label and the label *Metallon atriceps* in Walker's writing, but from the original publication one would deduce that the male was the type. Fortunately this series is clearly conspecific. A study of intermediates from southern Italian islands confirms my conclusion that this is a colour form of *strigosus* Nees.

Material studied. ENGLAND: unlocalized, 2 ♀, 1 ♂, Walker coll., 2 ♀, 2 ♂, Hope–Westwood coll., 1 ♀, 2 ♂, Dale coll.; N. Devon, Martinhoe Common, 1 ♀, 22.vii.1955 (*J. A. & D. J. Clark*); Oxon., Lewknor, 1 ♂, 2.vi.1957, Bald Hill, 2 ♀, 18.vii.1957; Bucks., Hell Coppice, 1 ♂, 23.vii.1957; Kent, West Wood, 1 ♀, 6.ix.1957; Lincs., Woodhall Spa, 1 ♂, 25.vii.1951 (*M. de V. Graham* or *M. F. Claridge*); Berks., Silwood Park, 3 ♀, 2 ♂, em. 4.vii–13.ix.1949, *ex Heterococcus pulverarius* (Newst.) (*K. Boratynski*). SWEDEN: Skåne, Småland, and Västergötland, 3 ♀, 4 ♂, Thomson coll.; Skåne, Dalby, 1 ♀, 13.v., 1 ♂, 7.vi.1938 (*D. M. S. & J. F. Perkins*); Stockholm district, 1 ♀, 31.viii.1951, Närke, Örebro district, 1 ♂, 9.vi.1954 (*A. Jansson*). MADEIRA: 6 ♀ 1 ♂ (*Wollaston*) (material of *atriceps* Walker). SPAIN: Madrid province, Cercedilla, 1 ♀, viii.1916, 1 ♂, 20.vii.1917 (*C. Bolivar*). ITALY, Pantelleria, 2 ♀, vii.1954 (*Pippa*); Sicily, Madonia, 9 ♀, 2 ♂, ix.1954 and 1955 (*Gendago*). AUSTRIA: 4 ♀, 5 ♂ (? all *Ruschka*); Leithagebirge, 1 ♀, 26.vii.1951, coll. of G. Domenichini.

GERMANY: Aachen, 3 ♀, 4 ♂ (*A. Förster*) (including syntypes of *apterogenes* (Först. MS.) Mayr. CZECHOSLOVAKIA: 136 ♀, 133 ♂, iv–x (*Z. Bouček* & *A. Hoffer* colls.). HUNGARY: Szigetszentmiklos, 1 ♀, x.1911, Nagyened, 1 ♀, 1917, Vácduka, 1 ♀, 3.ix.1925, Fejérvarcsvrgó, 1 ♂, 29.vii.1923, Tihany, 1 ♂, 25.ix.1930 (*J. Biró*); Tompa, 1 ♂, x.1954 (*Z. Bouček*). U.S.S.R.: Odessa, 1 ♀, vi.1957, Tbilisi, 4 ♀, 3 ♂ (*A. Hoffer* & *J. Dlabola*).

Ericydnus robustior Mercet

(Text-figs. 26, 29, 32)

1921 *Ericydnus ventralis* var. *robustior* Mercet, *Trab. Mus. nac. Cienc. nat., Madr.*: 164.
1952 *Ericydnus aeneus* Nikol'skaya, *Opred. Faune SSSR*, **44** : 356–7.
1966 *Ericydnus robustior* Mercet ; Kerrich, *Opusc. ent.* **31** : 119.

Head, seen from above (Text-fig. 26) broad, broadly and distinctly emarginate in front ; in facial view with cheeks very little rounded. Frontovertex with punctation as described for *strigosus* Nees, but with reticulation sharper and more outstanding : face and cheeks finely scaly-reticulate. Eyes moderately densely, conspicuously white-hairy, very distinctly so × 25.

Antenna relatively more elongate than in *strigosus* Nees, with scape generally over-reaching the median ocellus : funicle broadening more gradually and with segments hardly decreasing in length, the first one-third longer than the pedicellus, the sixth one-third longer than broad : club a little more or less than combined length of the two preceding segments.

Thorax structure as described for *strigosus* Nees, but scutellum (Text-fig. 29) weakly laminate at apex : scutellum dorsally almost flat in female, but moderately convex in male. Propodeum with reticulation on median area weaker than in *strigosus* Nees, often hardly developed.

Male antennae with pedicellus not much longer than broad : flagellum stouter in basal half than in *strigosus* Nees, tapering markedly and with segments becoming gradually shorter from middle ; club about equal to combined length of the two preceding segments.

Fore wings (Text-fig. 32) of breadth normal in the Encyrtidae, i.e. decidedly broader relatively than in other species of this genus. Micropterous forms scarce.

Coloration normally (f. *aeneus* Nik.) very much as described for middle European populations of *strigosus* Nees, but antennae and legs tending to be darker, the fore coxae generally pale only at extreme apex.

Coloration of the unique female type of *robustior* Merc. is as follows : head a decidedly brighter green, with duller reflections little in evidence : thorax and propodeum for the most part chrome-yellow : pronotum except broadly behind, and mesoscutum medially in front, blackish with blue-green reflection : mesoscutum and scutellum in middle with extensive light red-violet reflection : metanotum, and propodeum above between spiracles, black with bright reflection : gaster mostly blackish, overspread with dark green to bronzy reflections, dull testaceous at sides near base. Antennal scape dull testaceous. Legs dull testaceous, with hind tibiae and tarsi, and about apical half of fore tarsi, decidedly darkened. Fore wings moderately infuscate around about apical half.

It is noteworthy that the mesopleura are chrome-yellow in this form, whereas in the similarly coloured Madeiran form of *strigosus* Nees they are mainly blackish.

I have been able to make direct comparison between the unique type of *robustior* Merc., a paratype of *aeneus* Nik. and other material of the green-bodied form. Despite the striking colour difference, and that both yellow-bodied and green-bodied forms have been taken within the province of Madrid, I find no significant difference in structure, and have to regard the forms as conspecific.

Holotype ♀ studied. SPAIN: Madrid province, El Escorial, 4.vii.1918 on *Quercus* (*G. Mercet*).

Material studied of f. *aeneus* Nik. SWEDEN: Närke, Örebro, Brickebacken, 1 ♀, 4.viii.1955 (*A. Jansson*). SPAIN: Madrid province, Cercedilla, 1 ♀, 24.viii.1917 (*C. Bolivar*). FRANCE: Montpellier, 2 ♀, 20.ix.1951, associated with *Pinus* (*E. Biliotti*). CZECHOSLOVAKIA: 17 ♀, 14 ♂, 5.v–2.ix. (*Z. Bouček* and *A. Hoffer* colls.). U.S.S.R.: Bukhara region, 1 ♀, 8.ix.1948 (*Petrova*) (paratype of *aeneus* Nik.).

Ericydnus longicornis (Dalman)

(Text-fig. 33)

1820 *Encyrtus longicornis* Dalman, *K. svenska Vetensk-Akad. Handl.* **41** : 165–6.
1861 *Ericydnus atripes* Förster, *Programm Realschule Aachen* **1860–61** : xxxiii.
1966 *Ericydnus longicornis* (Dalman) ; Kerrich, *Opusc. ent.* **31** : 119.

Head from above broad, scarcely emarginate anteriorly ; in facial view with cheeks distinctly rounded. Frontovertex with reticulate microsculpture relatively sharp and outstanding, and with piliferous punctation relatively sparse ; the punctures in and beside the ocellar area are mostly separated by more than their own diameters, and there is a sparse row of comparable sized punctures on each side close to the orbital rows, leaving the frontovertex very broadly impunctate before the median ocellus. Eyes relatively weakly and sparsely hairy.

Antenna with scape distinctly over-reaching median ocellus : with pedicellus one and a half times as long as its greatest breadth and two-thirds length of the first funicle segment : funicle broadening strongly to middle, the first segment one and two-thirds times as long as broad, the fourth only slightly longer than broad, and the fifth and sixth slightly broader than long ; club equal to the combined length of the two preceding segments, and equal to them in width.

Reticulate microsculpture on pronotum and mesoscutum extremely fine, that on axillae and scutellum sharper : piliferous punctures on these sclerites fine and superficial, mostly separated by distinctly more than their own diameters. Scutellum relatively broad and convex, weakly laminate at apex. Mesopleura shining, no more than finely alutaceous. Propodeum finely reticulate on sides, shining and very finely alutaceous above, with no distinct median area.

Fore wing of moderate breadth, with marginal vein relatively shorter than in *strigosus* Nees but with postmarginal relatively longer, more than twice the length of the marginal ; in female with a broad fascia of infuscation along outer half of fore margin and a weaker one along outer half of hind margin (Text-fig. 33). Micropterous forms unknown.

Male flagellum relatively stout, slightly spindle-shaped, i.e. tapering markedly from middle to both base and apex ; club appreciably less than the combined length of the two preceding segments.

Frontovertex, pronotum above, mesoscutum, axillae and scutellum very dark green to indigo, merging to red-violet or bronzy on face and cheeks : pleura and abdomen a more or less bright testaceous, the pleura usually in greater part, and propodeum and gaster largely above, overspread with blackish. Mandibles pale brown, darker at apices. Antennae having scape testaceous, slightly to moderately darkened above, and pedicellus and flagellum brownish black with weak metallic reflections. Legs testaceous, with darkening on usually only the fore coxae at base, on all femora above in about apical half, and on all tibiae and tarsi.

Male differs as follows : pleura, propodeum and gaster brownish black with weak reflections. Antennal scape much less markedly paler than pedicellus and flagellum.

It would not have been possible for me to gain an adequate idea of this species but for the loan of a series of specimens from the collections of Drs. Z. Bouček and A. Hoffer, and it is no wonder that the unique type in the Stockholm museum, which I have studied, has invariably been misinterpreted in literature.

I have also studied the unique male type of *atripes* Förster, which is in the Vienna museum. The locality, in eastern Switzerland, appears to be the furthest west that the species is known.

Material studied. SWEDEN: unlocalized, ♂ type. SWITZERLAND, Roseg Tal, ♂ type of *atripes* Förster. AUSTRIA: Lower Austria, Gars, 1 ♂, 5.vii.1904 (?*Ruschka*). CZECHOSLOVAKIA: 7 ♀, 1.vi.–18.viii, 33 ♂, 18.v.–17.ix (*Z. Bouček* and *A. Hoffer* colls.). U.S.S.R.: Caucasus, Mt. Elbruz, 2,200–2,500 m., 1 ♀, viii.1960 (*E. S. Sugonyaev*).

Ericydnus sipylus (Walker)

(Text-figs. 27, 34–35)

1837 *Encyrtus sipylus* Walker, *Ent. Mag.* **4** : 445.
1838 *Encyrtus baleus* Walker, *Ibidem*, **5** : 428.
1861 *Encyrtus basalis* Förster, *Programm Realschule Aachen* **1860–61** : xxxiii.
1875 *Ericydnus latiusculus* Thomson, *Hymenoptera Scandinaviae* **4** : 125.
1876 *Ericydnus ventralis* var. *biplagiatus* (Förster MS.) Mayr, *Verh. zool.-bot. Ges. Wien* **25** : 763, 765.
1921 *Ericydnus ventralis* Dalman ; Mercet, *Trab. Mus. nac. Cienc. nat. Madr.*, 159–60, 162–4 [Mis-identification].
1949 *Ericydnus ventralis* var. *biplagiatus* Mayr ; Hellén, *Notul. ent.* **29** : 43.
1952 *Ericydnus bicolor* Nikol'skaya, *Opred. Faune SSSR* **44** : 356–7.
1966 *Ericydnus sipylus* (Walker) ; Kerrich, *Opusc. ent.* **31** : 120.

Head, seen from above, moderately broad, regularly rounded or scarcely emarginate in front, in facial view with cheeks generally almost rectilinear. Frontovertex with reticulate microsculpture regular and rather outstanding ; with piliferous punctures relatively sparse, usually nearly all being separated by more than their own diameters, and the orbitals very small ; face and cheeks moderately reticulate. Eyes moderately densely hairy, very distinctly so × 25. Antenna with scape not reaching median ocellus ; with pedicellus greatly narrowed to base, twice as long as broad and slightly longer than first funicle segment : funicle broadening gradually, with segments gradually decreasing in length from the second, the first one and three-quarter times as long as broad, the sixth almost as broad as long : club gradually broadening from funicle, almost the combined length of the three preceding segments.

Pronotum, mesoscutum, axillae and scutellum dull, finely alutaceous, beset with piliferous punctures that are sharp but fine, and are separated by more than their own diameters. Scutellum (Text-fig. 27) relatively broad, markedly more convex than in most species, strongly laminate at apex. Mesopleura moderately reticulate. Propodeum with sides moderately reticulate ; with median area bordered by and containing longitudinal keels, but not much less finely alutaceous than the areas flanking it ; with transverse keels sharp, the segment rather sharply declived behind them.

Fore wing (Text-fig. 34) relatively a little broader than in *strigosus* (Nees), and with marginal vein relatively short.

Head for the most part blue-green, with indeterminate metallic reflections, very occasionally red-violet, the upper face more bronzy. Thorax and abdomen bright testaceous, having large, pale blackish marks with weak green reflection which normally are as follows : pronotum except at sides extending on to mesoscutum, axillae almost wholly, large central mark on scutellum, mesopleura, propodeum except on median area, and about hinder half of gaster above. Mandibles testaceous, only slightly darkened at apices. Antennae with scape and pedicellus pale brown, to a greater or lesser extent darkened above ; with flagellum brownish black, with weak metallic reflections. Legs pale testaceous, with only the tarsal apices more than slightly darkened.

Male antenna with scape over-reaching median ocellus : with pedicellus 1½ times as long as broad, decidedly shorter than first funicle segment ; with flagellum longer than that of female : funicle almost filiform, the segments increasing gradually in length : club decidedly less than combined length of the two preceding segments (9 : 11), tapering strongly to apex.

Brachypterous forms of both sexes have the legs often much more darkened, especially the hind femora near apex and the hind tibiae; the undarkened parts are a duller testaceous. Brachypterous males have the darkened parts of the thorax and abdomen a decidedly brighter blue-green: macropterous males are unknown.

E. sipylus f. *baleus* Walker differs as follows: head sometimes as bright a blue-green but usually duller, often with bronzy reflection: thorax and abdomen dull blue-green, with no testaceous colouring or almost none, sometimes a little on and adjoining the tegulae. Antennal scape and pedicellus generally considerably darkened. Legs, as in brachypterous specimens of f. *sipylus*, generally darkened.

Text-fig. 35 illustrates a wing typical of this form. There is not much size range, for the wing covers the first large tergite to about half its length; but there is considerable variation in shape, for the wing may be much more or much less pointed than as shown.

In this species, macropterous female specimens with extensive bright testaceous coloration are normal in middle European latitudes, and those without such coloration extremely rare. Micropterous females have been collected in perhaps larger numbers than the macropterous, and of these, forms with little or no testaceous coloration (f. *baleus* Walker) and those coloured more like the normal macropterous specimens are about equally numerous. Micropterous females and males have been collected in about equal numbers, but macropterous males are unknown. This is the only species of the genus known in North America, where it has been found only in California and only in the micropterous form.

In the British Museum collection are two female specimens labelled *sipylus* in Walker's writing: the micropterous specimen must be the type, but fortunately it is a relatively well characterized specimen with coloration so similar to that of the macropterous that one can be confident of its identity.

A single brachypterous green-bodied female specimen is labelled *baleus*, and this I take to be the type.

In the Thomson collection there are two mounts standing as *latiusculus*. One is labelled " Hlm. Stål " and bears a specimen of *sipylus* f. *baleus*, while the other is labelled " Ö " (=Öland) and bears two specimens, the upper a female *sipylus* f. *baleus* and the lower a brachypterous male of *strigosus* Nees. Professor C. H. Lindroth writes that, despite extensive search, no specimen standing as *latiusculus* from Småland has been found among Thomson's duplicate material. Consequently I designate the specimen collected by Stål in the Stockholm district as NEOTYPE of *latiusculus* Thomson, which thus falls in synonymy with *sipylus* f. *baleus* Walker. It is possible that Thomson made a *lapsus* in recording the locality, for he had other *Ericydnus* collected in Småland by Boheman, who had a country house in that province.

In the Vienna museum there are eight mounts labelled " Er. basalis Förster, type ", but only three of these are also labelled to indicate the locality Roseg Tal in the Engadine, Switzerland. From these I select and designate the one remaining female specimen as LECTOTYPE and determine it as a brachypterous *sipylus* Walker. The specimens on the five other mounts are *Protyndarichus britannicus* Alam. All twelve specimens standing as *biplagiatus* Först. are brachypterous forms of *sipylus* Walk. The first four mounts comprising five specimens are labelled " Er. biplagiatus Förster, type ". I select and designate the first specimen as LECTOTYPE.

I have studied a Spanish specimen determined by Mercet as *ventralis*. I have also been able to study a paratype of *bicolor* Nik.

Material studied of f. *sipylus* Walker. ENGLAND: near London, 2 ♀ (including type), F. Walker coll.; unlocalized 3 ♀, Hope–Westwood coll.; Berks., Silwood Park, 2 ♀, 15–30.viii.1949, one ex *Heterococcus pulverarius* (Newst.), (*K. Boratynski*); Kent, Bedgebury, 1 ♂, 4.viii.1935 (*O. W. Richards*). SWEDEN: unlocalized, 1 ♀, 18.viii., Zetterstedt coll.; Småland and Gotland, 1 ♀, 2 ♂, Thomson coll. FINLAND: Nystad, 1 ♀, (*W. Hellén*). SPAIN: El Pardo, 1 ♀, 10.vi.1919 (*C. Bolivar*). GERMANY: Aachen, 14 ♀, (*A. Förster*) (as *biplagiatus* (Först. MS.) Mayr). SWITZERLAND: Roseg Tal, 1 ♀, 4 ♂, (*A. Förster*) (as *basalis* Först.). CZECHOSLOVAKIA: 105 ♀, 8 ♂, 5.vi.–16.ix. (*Z. Bouček* and *A. Hoffer* colls.). U.S.S.R.: Crimea, Sebastopol, 1 ♀, 2.iii.1911 (*W. Pliginskii*) (paratype of *bicolor* Nik.). U.S.A.: California, Los Angeles, 1 ♀, Provancher coll.; San Bernadino, Mill Creek, 1 ♂, 5.x.1947, on *Erigonum subscapum* (*P. H. Timberlake*).

Material studied of f. *baleus* Walker. ENGLAND: Oxon. 1 ♀, 2.vi., 1 ♂, 5.vii. 1957 (*M. F. Claridge*); Surrey, Box Hill, 1 ♀, 2.vii.1964 (*Z. Bouček*). SCOTLAND: Ross-shire, Gairloch, 1 ♀, 3.vii.1934 (*O. W. Richards*). SWEDEN: Stockholm district, 1 ♀ (*Stål*) (neotype of *latiusculus* Thomson); Öland, 1 ♀, Thomson coll.; Gotska Sandön, 1 ♀, Närke, Örebrö, 1 ♀, 21.vi.1941 (*A. Jansson*). FRANCE: Fontainebleau forest, 1 ♀ (*F. Walker*) (type). CZECHOSLOVAKIA: 175 ♀, 44 ♂, 1.iv.–20.ix. (*Z. Bouček* & *A. Hoffer* colls.). HUNGARY: Tasnad, 1 ♀, 8.vii.1912, Vácduka, 1 ♀, 6.vii.1930 (*J. Biró*). U.S.S.R.: Odessa, 2 ♀, 1 ♂, Tbilisi, 5 ♀, 2 ♂, vi.1957 (*A. Hoffer* & *J. Dlabola*).

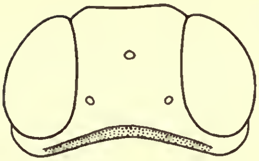
KEY TO SPECIES OF *ERICYDNUS* WALKER : MACROPTEROUS FORMS

1 Head, seen from above (e.g. Text-fig. 25) relatively elongate and narrow: scutellum hardly or very weakly laminate at apex: fore wings (Text-fig. 30) relatively very narrow: frontovertex, at least in part, and mesoscutum in middle at least tinged with, reddish violet 2

— Head, seen from above (Text-fig. 26) shorter and broader, scutellum rather weakly to strongly laminate at apex (Text-figs. 27–29); fore wings (Text-figs. 31–34) relatively broader 4

2 Head, seen from above (Text-fig. 25) with eyes not nearly reaching back of head, and having occiput extending back so that in this view it is clearly visible behind the occipital margin; in facial view with cheeks well rounded: antennal scape (♀) nearly reaching the median ocellus: eyes rather densely hairy: punctation of frontovertex and dorsum of thorax (see description): propodeum distinctly raised at mid base: Europe 3

FIGS. 25–35. *Ericydnus* species, females. 25–26. Head, seen from above, of 25, *E. ventralis* (Dalm.) and 26, *E. robustior* Merc. f. *aeneus* Nik. 27–29. Scutellum and propodeum, seen from above, of 27, *E. sipylus* (Walk.) ; 28, *E. strigosus* (Nees) and 29, *E. robustior* Merc. f. *aeneus* Nik. 30–35. Right fore wing of 30, *E. ventralis* (Dalm.) ; 31, *E. strigosus* (Nees) ; 32, *E. robustior* Merc. f. *aeneus* Nik. ; 33, *E. longicornis* (Dalm.) ; 34, *E. sipylus* (Walk.) and 35, *E. sipylus* Walk. f. *baleus* (Walk.). teg. = tegula.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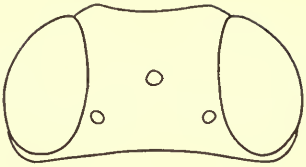
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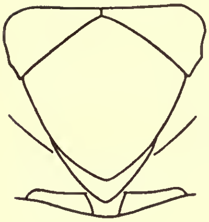
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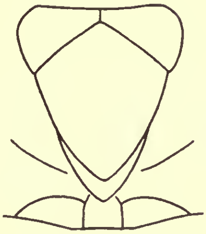
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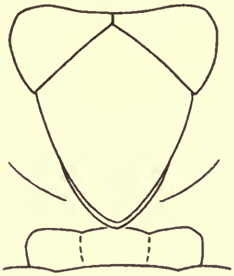
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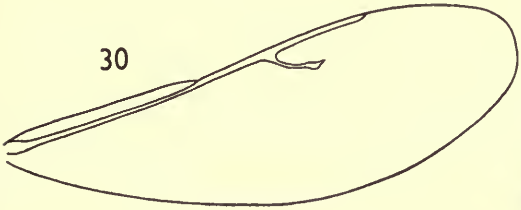
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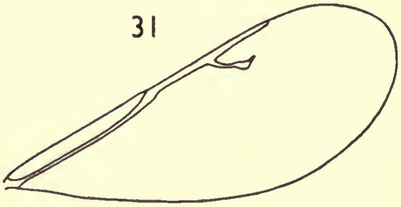
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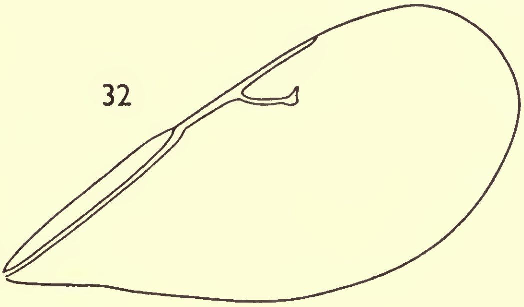
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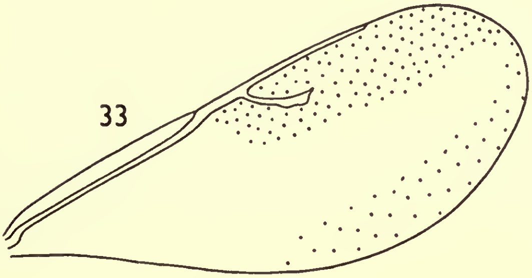
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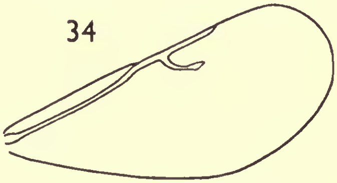
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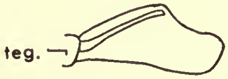


35

Head, seen from above, with eyes nearly reaching back of head, and with occiput not visible in this view behind the occipital margin; in facial view with cheeks little rounded: antennal scape (♀) relatively elongate, slightly over-reaching the median ocellus: eyes rather sparsely hairy: punctation of frontovertex and dorsum of thorax much finer and sparser: propodeum not markedly raised at mid base: Japan **japonicus** (Tachikawa)

3 Styli not or hardly projecting: frontovertex and dorsum of thorax with very finely reticulate microsculpture . . . . **ventralis** (Dalman)

Styli projecting by about two-fifths length of gaster: frontovertex and dorsum of thorax with microsculpture decidedly more outstanding . . . **caudatus** Erdös

4 Scutellum rather weakly laminate at apex (Text-fig. 29): head relatively broad (Text-fig. 26): fore wings relatively broad *or* with postmarginal vein more than twice length of marginal: funicle of male antenna stout 5

Scutellum strongly laminate at apex (Text-figs. 27–28): head narrower: fore wings narrow or moderately narrow (Text-figs. 31, 34), the postmarginal vein not twice the length of the marginal: funicle of male antenna almost filiform 6

5 Frontovertex with a row of moderate punctures on each side close to the orbitals, broadly impunctate between these before median ocellus: cheeks distinctly rounded: eyes relatively weakly and sparsely hairy: mesopleura shining, no more than finely alutaceous: fore wing of moderate breadth, with postmarginal vein more than twice length of marginal, in female with a broad fascia of infuscation along outer half of fore margin and a weaker one along outer half of hind margin: scutellum moderately convex in both sexes: funicle of female antenna broadening strongly to middle, thence about parallel-sided, the sixth segment slightly broader than long: funicle of male antenna stoutest in middle tapering to both base and apex, with club appreciably less than combined length of the two preceding segments . . . . **longicornis** (Dalman)

Frontovertex distinctly though sparsely beset with moderate punctures in middle before median ocellus: cheeks very little rounded: eyes moderately densely, conspicuously white-hairy: mesopleura scaly-reticulate: fore wing broad, with postmarginal vein less than twice length of marginal, almost hyaline in both sexes: scutellum flatter dorsally in female: funicle of female antenna broadening much more weakly right to apex, the sixth segment distinctly longer than broad: funicle of male antenna stoutest near base, tapering to apex, with club equal to combined length of the two preceding segments . **robustior** Mercet (= *aeneus* Nikol'skaya)

6 Scutellum relatively broad and convex (Text-fig. 27): propodeum sharply declived behind the transverse keels, with surface of median area little more strongly alutaceous than the dorsal areas to the side of it: orbital piliferous punctures minute, mostly separated by more than their own diameters: head regularly rounded anteriorly, in facial view with cheeks almost rectilinear: fore wings (Text-fig. 34) of moderate breadth, with marginal vein relatively short: thorax and base of gaster with extensive bright testaceous coloration (Spain to Finland): macropterous males unknown, and brachypterous male very scarce . **sipylus** (Walker)

Scutellum relatively narrow, dorsally almost flat (Text-fig. 28): propodeum not sharply declived behind the transverse keels, the median area with stronger reticulate microsculpture: orbital piliferous punctures, though small, not minute, separated by about their own diameters: head shallowly emarginate anteriorly, in facial view with cheeks moderately rounded: fore wings (Text-fig. 31) narrow, with marginal vein relatively longer: dorsum of thorax, in middle-European populations, a rather dark green (though chrome-yellow in Madeira and intermediates occurring in Mediterranean area); macropterous males and females about equally often encountered . . . . **strigosus** (Nees)

KEY TO SPECIES OF *ERICYDNUS* : REDUCED WINGED FORMS

1 Head, seen from above, having occiput extending back so that it is clearly visible behind the occipital margin: [forms with very reduced wings unknown] ***ventralis*** (Dalman)

Head, seen from above, having occiput not thus extending back, and not seen in this view behind the occipital margin 2

2 Orbital piliferous punctures minute, mostly separated by distinctly more than their own diameters: propodeum sharply declived behind the transverse keels: scutellum broad, strongly laminate at apex 3

Orbital piliferous punctures, though small, not minute, separated by about their own diameters: propodeum not sharply declived behind the transverse keels: if the scutellum is strongly laminate at apex it is less broad 4

3 Thorax and base of gaster with extensive bright testaceous coloration . ***sipylus*** (Walker)

Thorax without, or with very little, testaceous coloration ***sipylus*** (Walker) f. ***baleus*** (Walker) (= *latiusculus* Thomson of neotype)

4 Scutellum rather weakly laminate at apex (Text-fig. 29) and tending to be broader: head relatively broad (Text-fig. 26) . . . . ***robustior*** Mercet

Scutellum strongly laminate at apex (Text-fig. 27) and tending to be narrower: head narrower . . . . ***strigosus*** (Nees)

Species incorrectly placed in *Ericydnus* Walker

Ericydnus megalarus (Walker)

1838 *Eulophus megalarus* Walker, *Ent. Mag.* **5** : 477.

1909 *Ericydnus megalarus* (Walker) ; Schmiedeknecht, *Genera Insectorum* **97** : 203.

This species was collected at St. George's Sound, Australia, by C. Darwin. The type specimen was deposited in the British Museum (Natural History), but today there remain only two fore wings largely gummed together and two parts of a leg or legs. These parts seem more likely to be Pteromalid than Encyrtid.

Ericydnus chryscus (Walker)

1839 *Pteromalus? chryscus* Walker, *Monographia Chalciditum* **2** : 34–5.

1909 *Ericydnus chryscus* (Walker) Schmiedeknecht, *Genera Insectorum* **97** : 203.

This unique specimen has precisely the same data as the preceding. The head and gaster are missing, but the thorax, propodeum and wings are intact, and also the legs except for one tarsus. My colleague Mr. R. D. Eady has kindly examined this type, and has determined it as genus near *Tanaostigmodes*(Eupelmidae, Tanaostigminae).

Ericydnus reinhardi Mayr

1875 *Ericydnus reinhardi* Mayr *Verh. zool.-bot. Ges. Wien* **25** : 763–5.

Graham (1958, *Ent. Tidskr.* **79** : 151) identified this as a species of *Ectroma* Westwood, but did not see the type. Through the kindness of Dr. E. Königsmann I have examined the undoubted type, a specimen in the Reinhard collection from Dresden labelled with the data quoted by Mayr. I confirm Graham's conclusion. See also Hoffer 1957, *Čas. csl. Spol. ent.* **54** : 45–6, 51–2 + Pl. fig. 4.

Ericydnus hemipterus Girault

1915 *Ericydnus hemipterus* Girault *Mem. Queensland Mus.* **4** : 172.

Riek (1962, *Proc. Linn. Soc. N.S.W.* **87** (2) : 151–2) has transferred this species to *Xenoencyrtus* Riek, a genus related to *Ooencyrtus*. There are specimens in the collection of the British Museum (Natural History).

Ericydnus clavicornis Compere
1939 *Ericydnus clavicornis* Compere *Univ. Calif. Publs Ent.* **7** (4) : 62–3.

Compere has long since recognized the true generic placement of this species, which is treated in the present work below (p. 225).

Ericydnus ivorensis Risbec, 1953

Through the kindness of Dr. R. M. Quentin of Bondy, I have been able to examine the unique type of this species in London. It is clearly not an *Ericydnus*: my colleague Mr. R. D. Eady considers it closely related to *Ooencyrtus*.

GRANDORIELLA Domenichini, 1951

This genus is very closely related to *Ericydnus* Walker, and the single species has been studied with and is here redescribed in comparison with the *Ericydnus* species.

Grandoriella lamasi Domenichini

(Text-fig. 6)

1951 *Grandoriella lamasi* Domenichini, *Boll. Zool. agr. Bachic.* **17** (3) : 18–21.

Head from above (Text-fig. 6) relatively short and broad, with anterior emargination scarcely perceptible ; in facial view (Domenichini, 1951, fig. vii, 4) with cheeks long, almost straight. Frontovertex regularly, rather finely reticulate, beset with very distinct but superficial piliferous punctures, a row along each inner orbit, another row inward of each of these, and other punctures scattered irregularly between and around the ocelli ; the median area, however, between median ocellus and scrobal impression, impunctate : face and cheeks much more finely scaly-reticulate.

Antennae [the figure of Domenichini 1951 is apparently inverted] with scape slightly over-reaching median ocellus ; with pedicellus short, hardly a quarter longer than broad and hardly longer than the breadth of the first funicle segment ; funicle broadening very gradually, the first segment about three times length of its greatest breadth, the sixth about one and two-thirds times : club very little broader than sixth funicle segment, about three-quarters the combined length of the two preceding.

Pronotum, mesoscutum, axillae and scutellum covered with reticulation finer than that on frontovertex and densely beset with weak, superficial piliferous punctures. Scutellum raised well above propodeum, sharply margined but not laminate at apex. Mesopleura scaly-reticulate as on face. Propodeum on sides with reticulation about as on scutellum, between spiracular sulci almost smooth, with no trace of median area or keel, and with transverse keels weakly developed and placed well forward.

Fore wings (see Domenichini, 1951, figs. vi, vii, i, 3).

Frontovertex, pronotum, mesoscutum, axillae, scutellum and sides of propodeum green, with reflections mostly brassy but on hind margin of frontovertex and on scutellum more bronzy : propodeum a rather duller green : colour from frontovertex merging through peacock-blue, which in Californian specimens is seen also on inter-scrobal prominence, to the face and cheeks which are reddish violet : temples, occiput, mesopleura and mesosternum blackish green, with more or less strong metallic reflections : tegulae, postspiracular sclerite and gaster yellow-testaceous, the last tergites, however, more or less extensive green to violet but always leaving the gaster broadly yellow-testaceous at base. Mandibles pale brown, darker at apices. Antennae brownish black, with weak metallic reflections ; having scape, except for a line above, and pedicellus at apex and beneath, more or less pale brown. Legs yellow-testaceous, with the following blackened : fore and mid tarsi from about apex of metatarsus, hind femora above, hind tibiae in about apical two-thirds, and hind tarsi.

Redescribed from the following. U.S.A.: California, Fillmore, 2 ♀, 2 ♂, 15.v.1935, *ex Phenacoccus* sp. (*J. D. Maple*). MEXICO: Morelos, Cuernavaca, 1 ♀, ii.1945, from fruit of *Lantana camara* (*N. L. H. Krauss*). Material in U.S. National Museum and in British Museum (Natural History).

CLAUSENIA Ishii, 1923

It may happen that a description of a monobasic new genus makes mention of characters that prove later to be of only specific significance; but not many points in Ishii's description have been contra-indicated by the study of further species. However, I should describe the toruli as nearer obovate than oblong. The description of the thorax as elevated at the suture of the mesoscutum and axillae was presumably made from specimens artificially bent in that position. The gaster is normally shorter than the thorax rather than longer, especially in one of the new species; and the ovipositor is not or very little exserted when in a position of rest. Ishii's description "hypopygium prominent; ovipositor extruded" was presumably made from specimens in which these are at least partly everted and not in the normal resting position, and such specimens of *purpurea* Ishii do appear to have the gaster a little longer than the thorax. The proportions given for the wing veins do not apply to all the species; and the hairs distal to the speculum appear to become gradually finer and denser towards wing apex.

The generic description may now be given as follows: integument metallic coloured, weakly sclerotized and weakly sculptured. Head from above sub-reniform (Text-figs. 36–37); with eyes over-reaching occipital margin, pubescent: frontovertex not narrow, finely reticulate, with superficial piliferous punctures: toruli obovate, separated from mouth by less than their own length: scrobal impressions wide and rather deep, meeting above and extending back to a level about a third to half way up orbits. Mandibles bidentate, the upper tooth rounded at apex. Antennae of moderate length and not strongly clavate: scape elongate, not or but little dilated below: funicle 6-segmented, sub-cylindrical, the first segment relatively short, the following slightly and progressively increasing in size: club only moderately wider than funicle. Thorax convex and moderately deep dorsoventrally: mesoscutum with notauli short but discernible: axillae hardly separated: in certain lights a weak subapical furrow, suggesting a frenal furrow, can be traced on the scutellum laterally, reaching the large, sub-apical bristles, in all species except *purpurea* Ishii. Propodeum finely to very finely reticulate. Mid tarsus and tibial spur rather short and stout. Wings relatively short and broad. Fore wings with the usual diagonal speculum arising from near radius; proximal to this with coarse hairs, and with a large hairless area in region of basal cell; distally covered with normal hairs, which become finer and denser towards wing apex: submarginal vein thin and, in African species, hyaline just before its meeting with marginal, gently curved at junction with the obsolete basalis, so that the costal cell is almost parallel-sided for most of its length; having about seven stout hairs on the basal abscissa and a double row on prestigma: marginal vein usually quite three times as long as broad, distinctly longer than radial, and moderately longer or shorter than postmarginal. Gaster usually a little shorter, in one species much shorter, than thorax and propodeum.

Male differs as follows: frontovertex relatively much wider than in female, distinctly wider than an eye; with lateral ocelli separated by about their own diameter from eye (much less in female): toruli higher on face, separated from mouth by distinctly more than their own length. Antennae with scape relatively much shorter, more dilated below; with flagellum sparsely and coarsely hairy (Rosen, 1965, figs. 10 and 21).

Since the species of this genus are weakly sclerotized, specimens easily become distorted; so care must be taken in interpreting some generic and specific characters, especially the shape of the head.

Parthenogenesis is evidently very frequent in this genus. Tachikawa (1963) states that, in *C. purpurea* Ishii, females are commonly produced by unmated females. Rosen (1965) states that males are abundant in *josefi* Rosen but extremely rare in *purpurea* Ishii. I have studied males of *confusor* sp. n., but have seen none of the other three African species.

Clausenia purpurea Ishii

(Text-figs. 36, 38)

1923 *Clausenia purpurea* Ishii, *Bull. imp. Plant Quarant. Stn* **3** : 98–101, Pl. XVIII, figs. 1–8.
1963 *Clausenia purpurea* Ishii ; Tachikawa, *Mem. Ehime Univ.* VI, **9** : 70–72.
1965 *Clausenia purpurea* Ishii ; Rosen, *Proc. R. ent. Soc.* (*B*) **34** : 61–63.

Female : head from above (Text-fig. 36) with frontovertex nearly a third the total breadth ; in side view with cheeks not sharply narrowed to mouth ; in facial view (Text-fig. 38) : scrobes moderately impressed. Eyes strongly and densely hairy, very distinctly so × 25. Frontovertex with reticulate microsculpture relatively strong, with piliferous punctation neither fine nor sparse but rather irregular, the punctures separated by once to twice their own diameters : scrobal impressions and genae with reticulation very definite, the latter bearing scattered punctures.

Antenna (Rosen, 1965, fig. 15) with scape distinctly a little dilated below, contracting somewhat to base ; with pedicellus somewhat elongate : funicle with first four segments distinctly longer than broad, but fifth and sixth only a very little longer : club moderately stouter than sixth funicle segment, with first suture moderately oblique, and second strongly oblique and curved, nearly obliterating the lower margin of the second segment.

Pronotum, mesoscutum, axillae and scutellum covered with fine reticulation, as on head, the mesoscutum densely beset with piliferous punctures of moderate strength, separated by about or rather more than their own diameters, the scutellum much more sparsely punctate.

Fore wings with marginal vein distinctly longer than radial, and postmarginal about as long as marginal.

Head blue-green to blackish, with bronzy reflections, the inter-scrobal prominence usually bronzy. Pronotum, mesopleura and propodeum above blackish with bright reflections : mesoscutum steely green to bronzy or purplish : scutellum and sides of propodeum mainly a bright reddish purple, occasionally more green. Gaster blue-green, reddish purple and bright bronzy. Antennae having scape pale testaceous, usually darkened above ; having pedicellus and flagellum blackish brown, darkened above and with weak metallic reflections, the pedicellus above often distinctly green or purplish. Legs having coxae and fore femora except at apex, mid and hind femora and fore tibiae except at base and broadly at apex, blackish brown with green or purplish metallic reflections ; otherwise yellowish testaceous, the mid and hind tibiae darkened above near base, or sometimes more extensively, and the tarsi infuscate at apex.

Redescribed from the following. JAPAN: 1 ♀, ix.1913, *ex Pseudococcus comstocki* Kuwana (*S. J. Kuwana*), per H. H. Smith; 1 ♀, x.1917, ex mealybug on citrus (*C. P. Clausen*). CHINA: Hunan, 1 ♀, 9.vii.1949, coll. Djou; unlocalized, 2 ♀, "*ex* no. A414" (*J. L. Gressitt*); no further data, 1 ♀, 23.vi.1950. FORMOSA: 2 ♀, xii.1950, 1 ♀, xi.1951 (*T. C. Maa*). "PALESTINE" unlocalized, 10 ♀, xi.1938, *ex Pseudococcus comstocki* Kuwana (*N. Bergen*) (imported into U.S.A.), no data, 17 ♀, *per* H. Compere. Material in Citrus Experiment Station, Riverside, and British Museum (Natural History).

Clausenia corrugata sp. n.

(Text-fig. 37)

Female : head from above (Text-fig. 37) relatively slightly broader than in *purpurea* Ishii ; frontovertex relatively narrower, about a quarter the total breadth ; in side view with cheeks sharply narrowed to mouth ; in facial view longer, with cheeks narrowed at about half a right angle : scrobes weakly impressed. Eyes moderately hairy, distinctly so × 25. Head sculpture differing from that described for *purpurea* Ishii in having the punctures larger, those on genae quite large, and the frontovertex with transverse corrugations between median ocellus and top of scrobal impression : scrobal impression smooth just beside and above inter-scrobal prominence.

Antenna with scape narrow, not distinctly dilated below ; with pedicellus and flagellum much as described for *purpurea* Ishii.

Dorsum of thorax decidedly more shining than that of *purpurea* Ishii, the reticulation clear-cut but much finer, and the piliferous punctation on mesoscutum sparser and much sharper, the punctures separated by about or rather less than twice their own diameters. Mesosternum much more strongly sclerotized than in the other species, and produced backwards broadly in middle.

Fore wings with marginal vein almost twice as long as radial, and postmarginal distinctly longer than marginal.

More shining than the other species. Head, pronotum above, metathorax, and propodeum above blackish, with weak, mostly bronzy, metallic reflections : sides of pronotum, mesoscutum, scutellum, and sides of propodeum bright blue-green, with very conspicuous infusion of reddish purple, or propodeum sides may be more blue : mesopleura a much weaker reddish purple on a blackish or brownish background. Gaster blue-green above, bright bronzy in middle ; with metallic reflections much weaker below. Antennae blackish brown with weak metallic reflections : pedicellus above and scape above and at sides coloured almost as mesoscutum. Legs having coxae and trochanters except at apex, and femora except at base and apex, pale blackish brown with weak, mostly purplish, metallic reflections ; otherwise pale testaceous, except that the tibiae are a little darkened above near base, and the tarsi infuscate at apex.

Holotype ♀. GHANA: Tafo, 19.i.1953, *ex Pseudococcus concavocerarii* James on *Theobroma cacao* (*R. G. Donald*).

Paratypes. GHANA: 3 ♀, same data as holotype. NIGERIA: Ibadan, 1 ♀, 17.v. 1951 (*J. T. Davey*).

Holotype and paratypes in British Museum (Natural History), paratype in U.S. National Museum.

Clausenia josefi Rosen

1965 *Clausenia josefi* Rosen, *Proc. R. ent. Soc. Lond.* (B) **34** : 61–63.

Head from above shaped similarly to that of *purpurea* Ishii though more deeply emarginate behind ; in side view with cheeks sharply narrowed to mouth ; in facial view rather short, narrowed at more than half a right angle. Eyes just distinctly hairy × 25. Frontovertex with reticulate microsculpture fine, extending on to the scrobal impressions but there becoming much weaker : piliferous punctures before the median ocellus fine and rather sparse, but those on genae considerably larger than in *purpurea* Ishii.

Antenna as described and illustrated by Rosen (1965), notably the scape very slightly dilated below, the lower margin of the second club segment very short, as in *purpurea* and *corrugata*, but the fifth and sixth funicle segments about one and a half times as long as broad.

Pronotum, mesoscutum, axillae and scutellum with microsculpture finer than on frontovertex, and sparsely beset with piliferous punctures that are very fine, rather difficult to discern × 65, and mostly separated by much more than twice their own diameters.

Fore wings (see Rosen, 1965, fig. 7) with marginal vein widened to apex, only slightly longer than radial, and postmarginal slightly longer than marginal.

Head steely green to blackish, with bronzy reflections. Thorax and propodeum reddish purple with strong bronzy and occasional weak green reflections: scutellum with conspicuous bright blue-green colouring near apex; propodeum above blackish with bright reflections. Gaster bright blue-green, with slight bronzy and reddish purple reflections above, very much duller below. Antennae brownish black with moderate metallic reflections, the scape very narrowly paler at base. Legs having coxae and fore femora except at apex, mid and hind femora and fore tibiae except at base and apex, and mid and hind tibiae except at base and on about apical third to half, brownish black with green or purplish reflections; otherwise pale testaceous, the tarsi infuscate at apex.

ISRAEL: redescribed from two female paratypes and one further specimen: two male paratypes also studied. Despite the excellent description published by Rosen, it was found necessary to write this redescription in order to make my study of the species fully comparative with that of the other species treated.

Paratypes female and male are deposited in the British Museum (Natural History).

Clausenia guineensis **sp. n.**

(Text-figs. 39, 42)

Female: head from above about as broad, relatively, as in *purpurea* Ishii, but more deeply emarginate behind; in side view (Text-fig. 42) with cheeks not sharply narrowed to mouth; in facial view (Text-fig. 39) long, with cheeks narrowed at less than half a right angle: scrobes moderately impressed. Eyes just distinctly hairy × 65. Head sculpture much finer than in *purpurea* Ishii, the reticulate microsculpture very fine, and the punctures before median ocellus smaller and much sparser: scrobes and upper part of inter-scrobal prominence shining and almost smooth.

Antenna with scape distinctly a very little dilated below, and with flagellum more slender and elongate than in *purpurea* Ishii: funicle with segment 6 about one and a half times as long as broad, and 5 relatively longer than that: club moderately stouter than sixth funicle segment, with first suture at about a right angle to the axis, and second rather strongly oblique, but leaving the lower margin of the second segment more than half the length of the upper.

Dorsum of thorax covered with fine reticulation, about as strong as that on *purpurea* Ishii and stronger than on head of this species: piliferous punctures on mesoscutum sparser and finer than in *purpurea*, mostly separated by considerably more than their own diameters though less than twice, those on scutellum very fine and sparse.

Fore wings with marginal vein almost twice as long as radial, and postmarginal about as long as marginal.

Head, thorax and propodeum brownish black with metallic reflections: mesoscutum and scutellum reddish purple, often with infusions of bluish, on a background of green: sides of propodeum seldom a decidedly bright purple. Gaster blue-green, reddish purple and bright bronzy. Antennae blackish brown, darkened above and with weak metallic reflections, the pedicellus above and scape above and at sides distinctly purplish, or more rarely greenish, and the scape pale at base. Leg colour as described for *purpurea* Ishii except that the hind femora are more or less narrowly pale at apex.

Holotype ♀. NIGERIA: Ibadan province, Idiayunre, 31.viii.1954, *ex Planococcoides njalensis* (Laing) on *Theobroma cacao* (*R. G. Donald*).

Paratypes the following: NIGERIA: 1 ♀, same data as holotype but 7.xi.1954; Abeokuta province, Ilaro, 1 ♀, 15.vi.1953, *ex Planococcus kenyae* (Le P.), 1 ♀, 27.i.1954, *ex Planococcus* sp.; Benin province, Utbogiobo, 1 ♀, 15.v.1954, Cameroons province, near Kumba, 1 ♀, 21.iii.1954, *ex Planococcus citri* (Risso), (all *R. G. Donald*); 6 ♀, Olofin, Agaloke, Otun, Olavo, Akasan and Ojokoro, 6.iii.–15.v.1951 (*J. T. Davey*). GHANA: all *ex Planococcoides njalensis* (Laing) on *Theobroma cacao*, Tafo, 5 ♀, xi.1949 (*F. E. Decker*), 4 ♀, 18.iii, 3 ♀, v.1949, 1 ♀, 6.iv.1950, Oyoko, 1 ♀, 30.iv.1950 (*R. G. Donald*).

Holotype in British Museum (Natural History); paratypes in British Museum (Natural History), in U.S. National Museum, in Citrus Experiment Station, Riverside, in Australian National Collection, in Museum d'Histoire Naturelle, Geneva, in Národní Museum, Prague, in West African Cacao Research Institute, in Coryndon Museum, Nairobi, and in Department of Agriculture, Pretoria.

***Clausenia comperei* sp. n.**

(Text-fig. 41)

Head from above about as broad, relatively, as in *purpurea* Ishii, and about as deeply emarginate behind; in side view (Text-fig. 41) with cheeks rather sharply narrowed to mouth; in facial view long, with cheeks narrowed at less than half a right angle: scrobes deeply impressed. Eyes distinctly hairy × 45. Head sculpture even weaker than in *guineensis* sp. n., the frontovertex shining, with microsculpture and punctures extremely fine: scrobes and the inter-scrobal prominence shining and almost smooth.

Antenna with scape almost parallel-sided in about apical half, regularly narrowed from before middle to base, where it is very narrow; with pedicellus and flagellum much as described for *guineensis* sp. n., but club perhaps a little less swollen.

Dorsum of thorax with reticulation very fine, and beset with punctures that are very fine, mostly separated by well over twice their own diameters.

Fore wings with marginal vein about twice as long as radial, and postmarginal about as long as marginal.

Head, thorax and propodeum as described for *guineensis* sp. n., but sides of propodeum a bright purple. Gaster blue-green, reddish purple and bright bronzy, the first large tergite mainly blue-green. Antennal coloration much as described for *guineensis* sp. n., but the brighter colour on scape and pedicellus less distinct. Leg colour as in *guineensis* sp. n. except that the hind tibiae are rather narrowly pale at apex.

Holotype ♀. SOUTH AFRICA: Cape Province, 1924–5, " Rust's no. L2 ". This number refers to specimens obtained by E. W. Rust in various localities in the Cape Province and recorded as reared from *Baccacoccus* sp. and *Saissetia* spp.: H. Compere suspects, however, that they issued from overlooked mealybugs (Pseudococcinae).

Paratypes. SOUTH AFRICA, 3 ♀, same data as holotype; Transvaal, Pienaarspoort 1 ♀, ii.1954, 2 ♀, v.1955, ex Diaspine scale, (*E. C. G. Bedford*). ERITREA: Asmara, 1 ♀, 19.iv.1930 on *Acacia cyanophylla*, Eztaclesan, 1 ♀, 11.v.1930 on *Croton macrostachys*, Cheren, 1 ♀, 15.iv.1930 (*H. Compere*).

Holotype in British Museum (Natural History); paratypes in British Museum (Natural History), in Citrus Experiment Station, Riverside, in Department of Agriculture, Pretoria and in Coryndon Museum, Nairobi.

***Clausenia confusor* sp. n.**

(Text-fig. 40)

Head from above very similar in proportion to that of *purpurea* Ishii; in side view (Text-fig. 40) with cheeks sharply narrowed to mouth; in facial view short, with cheeks narrowed at more than half a right angle: scrobes moderately impressed. Eyes just distinctly hairy × 45. Head sculpture much as in *guineensis* sp. n.

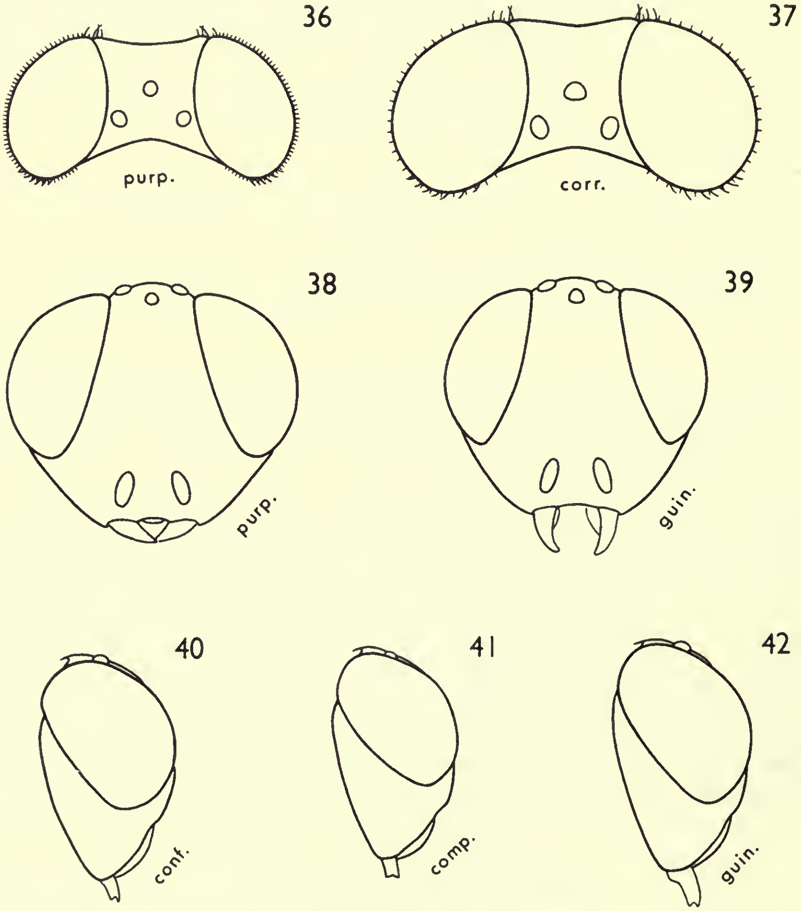
Antenna with scape as described for *purpurea* Ishii ; with pedicellus relatively shorter than in that species : flagellum altogether relatively short and stout : funicle segments 5 and 6 only one and a quarter times as long as broad : club considerably stouter than sixth funicle segment, with first suture at about a right angle to the axis, and second not very strongly curved or oblique, not nearly obliterating the margin of the second segment.

Mesoscutum very finely reticulate, irregularly beset with piliferous punctures that are separated by about their own diameters : scutellum very finely and sparsely punctate, very finely alutaceous and shining.

Fore wings with marginal vein about as long as postmarginal, and almost twice length of radial.

Gaster much shorter than thorax : apical sternite semitruncated and notched in the middle.

Head, thorax and propodeum brownish black or blackish brown with metallic reflections : mesoscutum and scutellum blue-green, with a greater or lesser infusion of reddish purple, or sometimes in part bright bronzy (the purple appearing the more dominant the less the back-



FIGS. 36–42. *Clausenia* species. 36–37. Head, seen from above of 36, *C. purpurea* Ishii and 37, *C. corrugata* sp. n. 38–39. Head, in facial view of 38, *C. purpurea* Ishii and 39, *C. guineensis* sp. n. 40–42. Head, in dextro-lateral view, of 40, *C. confusor* sp. n. ; 41, *C. comperei* sp. n. and 42, *C. guineensis* sp. n.

ground colour is high-lighted): sides of propodeum greenish, purplish or bronzy. Gaster blue-green, reddish purple and bright bronzy above, much duller below. Antennae having scape blue-green to blue, with infusion of reddish purple, and pedicellus and flagellum blackish brown, with weak metallic reflections. Leg colour as in *guineensis* sp. n., but hind tibiae varying from only moderately darkened in about basal half above to only rather narrowly pale at apex.

Male: head, dorsum of thorax and gaster, and sides of propodeum with bright metallic reflections on a mostly dark green background; antennae similar but, except sometimes for scape, more weakly coloured; pleura, propodeum above, coxae except at apex, and femora and tibiae more or less broadly in middle, similar but still more weakly so; legs otherwise stramineous to pale testaceous.

Holotype ♀. GHANA, Tafo, 9.iii.1950, *ex Planococcoides njalensis* (Laing), (*R. G. Donald*).

Paratypes. GHANA: Tafo, 2 ♀, 2 ♂, 1947, 1 ♂, ii.1949, 4 ♀, xi.1949, Oyoko, 3 ♀, iii.1950, Bunsu, 3 ♀, iv.1950, Adonkwanta, 2 ♀, 13.iii.1950, all *ex Planococcoides njalensis* (Laing) (*A. H. Strickland, R. G. Donald* or *F. E. Decker*); Akwadum, 1 ♀, 1 ♂, 30.iii.1951, Tafo, 2 ♂, 30.iv.1954 (*F. E. Decker*). NIGERIA: Ibadan Province, Idiayunre, 3 ♀, 7.i, 6 ♀, 28.ix.1954, *ex Planococcoides njalensis* (Laing) on *Theobroma cacao*, Benin Province, Ugbogiobo, 2 ♂, 15.v.1954, *ex Planococcus citri* (Risso) on *Theobroma cacao*, Abeokuta Province, Ilaro, 1 ♂, 26.i.1954, ex Pseudococcine nymph on *Theobroma cacao* (all *R. G. Donald*).

Holotype in British Museum (Natural History); paratypes in British Museum (Natural History), in U.S. National Museum, in Citrus Experiment Station, Riverside, in Australian National Collection, in Národní Museum, Prague, in West African Cacao Research Institute, in Coryndon Museum, Nairobi, and in Department of Agriculture, Pretoria.

KEY TO SPECIES OF *CLAUSENIA* ISHII : FEMALES

1 Gaster much shorter than thorax: hypopygium semitruncated and notched in the middle, scarcely boat-shaped: [antennal club with second suture not strongly curved or oblique: frontovertex shining, with reticulate microsculpture very fine and punctation sparse]: Africa . . . . **confusor** sp. n.

– Gaster not much shorter than thorax: hypopygium boat-shaped, pointed at apex . . . 2

2 Antennae having funicle segments 5 and 6 only a little longer than broad: frontovertex more strongly sculptured, hardly shining (see couplet 3): eyes strongly or rather strongly hairy (Text-figs. 36–37): [mesoscutum beset with punctures of moderate strength] 3

– Antennae having sixth funicle segment about one and a half times as long as broad and fifth still longer: frontovertex more shining, with reticulate microsculpture very fine and punctation sparse: eyes moderately or weakly hairy . . . 4

3 Head from above less broad (Text-fig. 36), and in side view with cheeks not sharply narrowed to mouth: frontovertex not having transverse corrugations: mesoscutum more densely punctate: marginal vein of fore wing only moderately longer than radial: head usually dominantly dark green: antennal scape pale testaceous, usually darkened above: Asia, introduced to U.S.A. . . . . **purpurea** Ishii

– Head from above broader (Text-fig. 37), and in side view with cheeks sharply narrowed to mouth: frontovertex having weak but distinct transverse corrugations between median ocellus and top of scrobal impression: mesoscutum less densely punctate: marginal vein of fore wing almost twice length of radial: head not dominantly dark green: antennal scape blackish brown with metallic reflections, not testaceous beneath: West Africa . . . . **corrugata** sp. n.

4 As in the two preceding species, second suture of antennal club strongly oblique and curved, leaving the lower margin of the second club segment very short (especially apparent on inner side), and also head in facial view shorter (cf. Text-fig. 38): fore wings with marginal vein widened to apex, only slightly longer than radial: eyes moderately hairy, just distinctly so × 25; Israel . . . . . ***josefi*** Rosen

Antennae having second suture of club rather strongly oblique yet leaving the lower margin of the second club segment more than half length of upper: head in facial view longer (e.g. Text-fig. 39): fore wings with marginal vein parallel-sided, almost or quite twice length of radial: eyes more weakly hairy: Africa 5

5 Head in side view (Text-fig. 42) with cheeks not sharply narrowed to mouth: punctures on mesoscutum not very fine, many separated by less than twice their own diameters: hind tibiae usually mainly pale, darkened above, but if more extensively darkened then at least broadly pale at apex: West Africa . ***guineensis*** sp. n.

Head in side view (Text-fig. 41) with cheeks rather sharply narrowed to mouth: punctures on mesoscutum very fine, mostly separated by well over twice their own diameters: hind tibiae only rather narrowly pale at apex: South Africa, Eritrea ***comperei*** sp. n.

Species incorrectly placed in *Clausenia* Ishii

Clausenia saissetiae Yasumatsu & Yoshimura, 1945, *Mushi*, **16** : 31–32.

Those authors stated that the position of this species within the genus was anomalous. The species is treated in the present work below (p. 226).

AENASIINA

Key to Genera of the *AENASIINA* : females

1 Head, seen from above, menisciform: frontovertex relatively broad, at narrowest about twice as broad as an eye; covered with coarse, umbilicate, contrastingly-coloured punctures that are well-separated above, at least beside the interocellar area, but become more reticulate near the malar groove, to which they extend (Text-fig. 43): head in side view regularly rounded down to mouth, with facial impression weak or virtually absent (Text-fig. 44): mesoscutum relatively short, hardly more than half the length of the scutellum: costal cell bearing a single row of hairs on both upper and under surface, rarely with a few other hairs near apex (Text-fig. 45): [antennal scape never more than slightly dilated below] 2

Head, seen from above, not or hardly menisciform: frontovertex at narrowest never more than slightly broader than an eye, usually much narrower; its punctation various but if coarse, then almost wholly closely reticulate above (e.g. Text-fig. 55): head in side view not so regularly rounded, with facial impression always more or less large and strong (Text-figs. 61–66 and 109–110): mesoscutum relatively longer, always much more than half the length of the scutellum 3

2 Facial impression virtually absent, not reaching lower level of eyes, the ill-defined scrobes shorter than the toruli: antennal scape, except in Australian species, almost cylindrical, very slender and elongate: costal cell sub-parallel to apex, the wing margin, except in Australian species, very little emarginate there: marginal vein several times as long as broad, much longer than postmarginal and radial (Text-fig. 45): southern Europe, Africa, Australia . . . ***METAPHAENODISCUS*** Mercet

Facial impression weak but distinct, reaching well above lower level of eyes, the scrobes quite distinct, much longer than the toruli: antennal scape slightly but distinctly dilated below, much less elongate (Text-figs. 46–48): wing margin emarginate at apex of costal cell: marginal vein not or hardly twice as long as broad, much shorter than postmarginal and radial (Text-figs. 49–50): America and Africa ***CHALCASPIS*** Howard

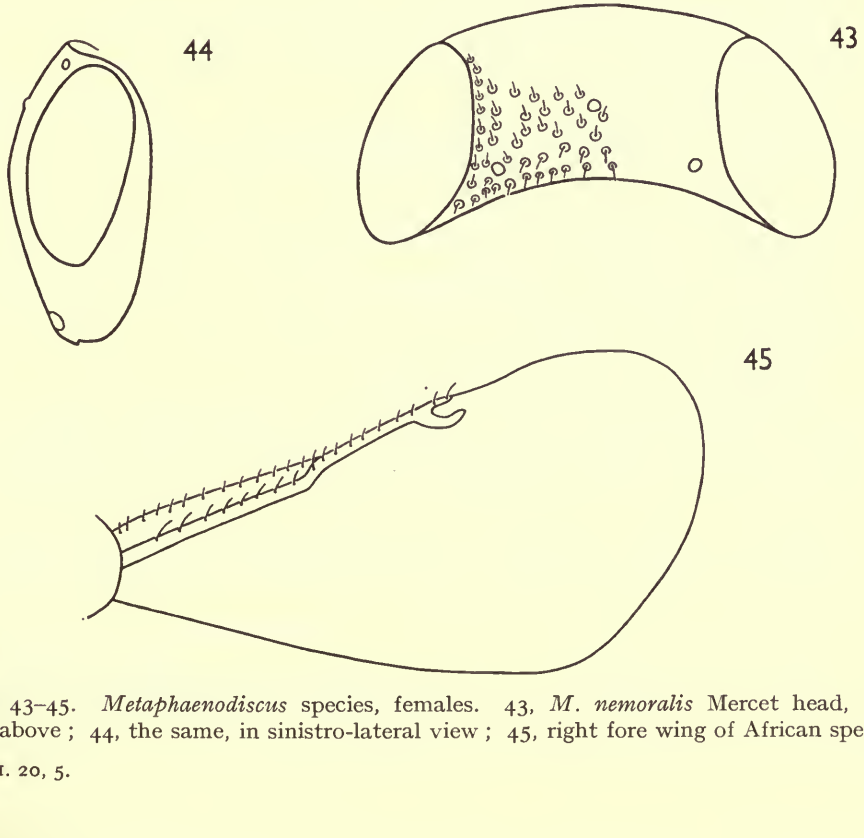
3 Frontovertex of moderate breadth, one-third to one-sixth the total head breadth; covered, except near occiput, with coarse, umbilicate punctures, which are wholly or almost wholly reticulate, especially just above facial impression (Text-figs. 54–58 and 67–68): punctures that are at least moderately coarse descend at least some way between eyes and facial impression: [venation not as in *Neodiscodes*, see below] 4

Frontovertex nearly always less than one-sixth the total head breadth [but cf. venation of *Neodiscodes* : punctation shallow to moderate, frequently in large part, but usually not almost wholly, reticulate (Text-figs. 94–95): none but fine punctures descend between eyes and facial impression 5

4 Postmarginal vein not, or not very much, longer than radial (Compere, 1937, fig. 3): reticulate punctation descending at least some of the way between eyes and facial impression (Text-figs. 65–66 and 83–87): a large group of species has the female antennal scape strongly dilated below . . . . . . ***AENASIUS*** Walker

Postmarginal vein very much longer than radial (Text-fig. 89): reticulate punctation reaching top of facial impression but stopping short there, the punctures descending between eye and facial impression being scattered, shallower, and only moderately coarse (Text-figs. 90–91): female antennal scape not strongly dilated below . . . . ***BLEPYRUS*** Howard

5 Antennal scape (female) strongly dilated below, 2 to 2½ times length of its greatest breadth (Compere, 1931, fig. 3e): postmarginal and radial veins both rather long, the postmarginal slightly the longer, the radial emitted at a very acute angle with it (Text-figs. 96–98): frontovertex with punctation rather coarse and deep, stronger before than behind median ocellus, and often in large part reticulate (Text-figs. 94–95): scutellum, except at sides, about as shining as the mesoscutum: Africa and Asia . . . . ***NEODISCODES*** Compere



Figs. 43–45. *Metaphaenodiscus* species, females. 43, *M. nemoralis* Mercet head, seen from above ; 44, the same, in sinistro-lateral view ; 45, right fore wing of African species.

Antennal scape (female) weakly dilated below, 3½ to 6½ times length of its greatest breadth (Text-figs. 106–108): postmarginal vein generally considerably longer than radial, the latter emitted at a less acute angle with it and also relatively shorter than in alternate (Text-figs. 111–112): frontovertex with punctation shallow to moderate, stronger behind than before median ocellus, and seldom reticulate: scutellum generally decidedly less shining than the mesoscutum: America **EURYRHOPALUS** Howard

METAPHAENODISCUS Mercet, 1921

(Text-figs. 43–45)

1921 *Metaphaenodiscus* Mercet, *Trab. Mus. nac. Cienc. nat., Madr.*: 59, 60–64, 626–9.

Material of this genus is not adequate for a revision, but the diagnosis of two undescribed species will give further information on the distribution and range of structure. The Australian species is clearly the most nearly related to the next genus, *Chalcaspis* Howard.

Diagnoses of the Species of *METAPHAENODISCUS* Mercet: females

A. Antennal scape very slender and elongate, almost cylindrical: all funicle segments distinctly longer than broad: club suddenly expanded from funicle, about four-fifths length of combined funicle segments.

Mesoscutum closely reticulate-punctate: scutellum rather loosely so.

Spiracles of propodeum moderately large, clearly transverse, and clearly less than their shorter diameter from both anterior margin and declivity.

Fore wings strongly infuscate.

Spain: (see Mercet, 1921) . . . . **nemoralis** Mercet

Material in Instituto Español de Entomologia, Madrid.

B. Antennal scape as described for *nemoralis* Mercet: all funicle segments, except the first, distinctly broader than long: club not suddenly expanded from funicle, about equal in length to pedicellus and all funicle segments combined.

Mesoscutum very loosely reticulate-punctate: scutellum with piliferous punctures, except at sides, well separated.

Spiracles of propodeum small, weakly transverse, clearly further than their longitudinal diameter from both anterior margin and declivity.

Fore wings strongly infuscate.

South Africa: Transvaal, (*D. P. Annecke*) . . . . sp.

Material in Plant Protection Research Institute, Pretoria.

C. Antennal scape slightly but distinctly dilated below, five times length of its greatest breadth (rather similar to that of *Chalcaspis lucidus* sp. n., Text-fig. 46): first funicle segment slightly, the remainder distinctly, transverse: club not suddenly expanded from funicle, a little shorter than pedicellus and all funicle segments combined.

Mesoscutum rather loosely reticulate-punctate: scutellum with punctures sharply marked but relatively shallow, many almost contiguous in transverse though much further separated in longitudinal direction.

Spiracles of propodeum almost circular, about their own diameter from both anterior margin and declivity.

Fore wings moderately infuscate in about basal two-fifths, beyond that weakly so.

Australia: Queensland, S.E., (*R. E. Turner*) . . . . sp.

Material in British Museum (Natural History).

CHALCASPIS Howard, 1895

1895 *Chalcaspis* Howard, *Proc. U.S. natn. Mus.* **17** : 606.
1915 *Chalcaspis* Howard; Girault, *Ann. ent. Soc. Am.* **8** : 280.

Three species of this genus were previously known, all occurring in the U.S.A. Dr. B. D. Burks has kindly compared the types of all three, which are located in Washington, with specimens I had studied, having at hand typescript copies of my descriptions and keys, and photocopies of my figures. A new species from the Caribbean is now described.

Two species have been received from southern Africa, each in a single specimen caught in a trap. They have in common several characters by which they differ from the American species. In this paper they are diagnosed but not validated. The specimens are located in the Plant Protection Research Institute, Pretoria.

Chalcaspis lucidus sp. n.

(Text-figs. 46, 51)

Frontovertex shining, with reticulate microsculpture extremely fine, just comfortably discernible × 65 ; with orbital piliferous punctures conspicuous, separated by about their own diameters, and punctures near median ocellus well separated by about their own diameters.

Antenna with scape (Text-fig. 46) over 5½ times length of its greatest breadth, very slightly expanded below to about middle, almost parallel-sided beyond this ; with pedicellus twice length of its greatest breadth ; with funicle segments short cup-shaped to short cylindrical, the sixth one and a half times as broad as long, and club one and a quarter times length of combined funicle segments.

Mesoscutum with reticulate microsculpture fine, beset with rather shallow piliferous punctures that mostly are separated by rather more than their own diameters : axillae and scutellum similarly shining and with fine reticulate microsculpture, beset with shallow piliferous punctures that mostly are separated by considerably more than their own diameters (Text-fig. 51).

Fore wings with fore margin moderately emarginate at apex of costal cell and beyond postmarginal : radial and postmarginal stouter than in *pergandei* How., extending the same distance to the narrow hyaline streak : radius almost rectilinear before the decidedly broadened stigma.

Head coppery, with punctures and sometimes also the scrobal impressions bright brassy green. Dorsum of thorax and sides of propodeum brassy green with infusions of coppery which, in the type, are strong on mesoscutum. Pleura and propodeum above dull green : gaster green with infusions of coppery to brassy. Antennae with scape a bright testaceous ; with pedicellus pale castaneous ; with flagellum a pale testaceous, the club darkened to pale, dull brown in about apical half or almost to base. Legs mainly a bright testaceous, the tarsi paler, but dark at apex : coxae dull green, and femora and mid tibiae to some extent from base infuscate with metallic reflection.

Holotype ♀. CUBA: Rio Cauto, 21.xi.1930, *ex Phenacoccus solani* (Ferris), " C.S.C. Ent. no. 5119 ".

Paratype: 1 ♀ (same data as holotype).

Holotype in U.S. National Museum, paratype in British Museum (Natural History).

Chalcaspis pergandei Howard

(Text-figs. 47, 50, 52)

1895 *Chalcaspis pergandei* Howard, *Proc. U.S. natn. Mus.* **17** : 606–7.

Frontovertex shining, with reticulate microsculpture extremely fine, just comfortably discernible × 65 ; with orbital piliferous punctures large, separated by less than their own diameters, and punctures near median ocellus in a loose reticulation.

Antenna with scape (Text-fig. 47) nearly five times length of its greatest breadth, expanded to about two-fifths its length, then almost parallel-sided ; with pedicellus twice length of its greatest breadth ; with funicle segments short cup-shaped to short cylindrical, the sixth nearly twice as broad as long, and club about one-third longer than combined funicle segments.

Mesoscutum, axillae and scutellum rather dull, with reticulate microsculpture rather fine to moderate, beset with coarse piliferous punctures that are almost in a loose reticulation (Text-fig. 52).

Fore wings (Text-fig. 50) with fore margin moderately emarginate at apex of costal cell, rather strongly emarginate beyond postmarginal : radial and postmarginal relatively slender, extending the same distance to the broad hyaline streak : radius decidedly curved and with stigma scarcely broadened.

Head coppery, with punctures, marginal parts and mouth region bright brassy green. Dorsum of thorax and sides of propodeum a fundamental brassy green, with infusions of coppery to brassy. Pleura and propodeum above steely green ; gaster a much brighter green, with strong brassy to coppery reflections. Antennae having scape a dull testaceous, narrowly dark-marked on upper and lower margins ; having pedicellus blackish, with metallic reflections ; having funicle pale testaceous, the basal segments considerably darkened, and club dull brown with weak metallic reflections. Leg coloration much as described for *lucidus* sp. n., but the testaceous colouring duller and the infuscation more extensive.

Redescribed from the following: U.S.A.: Arizona, Sabino Co., 1 ♀, 14.iii.1937 (*R. A. Fleck*); New Mexico, 13½ m. N. of Roswell, 1 ♀, 21.viii.1929 on *L. alyssoides* (*V. E. Romney*); Texas, Brown Co., 1 ♀, 12.vii.1937 on peach (ref. T 5344), Bangs, 1 ♀, 18.viii.1937 on peach (*Christenson* & *Jones*) (ref. C 3269); Kansas, Onaga, 1 ♀, Crevecoeur; Nebraska, Halsey, 1 ♀, 6.viii.1958 (*H. Henzlik*). Material in U.S. National Museum and in British Museum (Natural History).

Chalcaspis arizonensis Girault

(Text-fig. 48)

1915 *Chalcaspis arizonensis* Girault, *Ann. ent. Soc. Am.* **8** : 280.

Frontovertex less shining than in *pergandei* How. and *lucidus* sp. n., with reticulate microsculpture extremely fine yet more outstanding than in those species ; with orbital piliferous punctures large, separated by less than their own diameters, and punctures near median ocellus and on inter-ocellar area in a loose reticulation.

Antenna with scape (Text-fig. 48) over four times length of its greatest breadth, broadest about in middle, almost parallel-sided beyond this, with upper margin markedly bowed downward before middle ; with pedicellus long-necked then strongly expanded, twice length of its greatest breadth ; with funicle segments short-cylindrical, the sixth one and a half times as broad as long, and club one and a quarter times length of combined funicle segments.

Mesoscutum with reticulate microsculpture rather fine, beset with piliferous punctures of moderate depth that mostly are separated by much less than their own diameters : axillae and scutellum dull, with reticulate microsculpture regular and of moderate strength, beset with piliferous punctures that are smaller and shallower but denser.

Fore wings with fore margin moderately emarginate at apex of costal cell and beyond postmarginal: radial and postmarginal stouter than in *pergandei* How., the radial the stouter: radius rather strongly curved and with stigma scarcely broadened, extending very slightly beyond postmarginal, but the broad hyaline streak is perpendicular to the wing margin.

Head coppery, with punctures and marginal parts a more or less bright brassy green. Dorsum of thorax and sides of propodeum dull blue-green, mainly overspread with infusions of dull bronzy. Pleura and propodeum above steely green; gaster a brighter green, with weak, mostly brassy, infusions. Antennal coloration as described for *pergandei* How., but the scape and basal funicle segments not always dark-marked. Legs having coxae steely green; having femora and tibiae dull brown overspread to some extent, often mainly, with infuscation which has metallic reflection, the tibiae and sometimes femora paler at apex: tarsi stramineous, a little darkened at apex.

Redescribed from the following. U.S.A.: Arizona, Phoenix, 2 ♀, 16.vii.1943, *ex Phenacoccus solenopsis* Tinsley (*R. Fleck*) (Lot no. 43. 8395); Utah, St. George, 1 ♀, 15.iv.1930 on *Salsola pestifer* (*D. E. Fox*); Idaho, Burley, 1 ♀, 16.ix.1930 on *Salsola pestifer*, 1 ♀, 13.x.1932 in wind vane trap (*P. N. Annand*); Texas, Brownwood, 1 ♀, 26.viii.1937 on peach (*Christensen & Jones*) (ref. c 3776); Missouri, Maplewood, " mealybug parasite issued by 4.ix.30 " (*Satterthwait*) (Webster Grvs. no. 30276). Material in U.S. National Museum and in British Museum (Natural History).

Chalcaspis phenacocci (Ashmead)

(Text-fig. 53)

1902 *Blepyrus phenacocci* Ashmead, *Can. Ent.* **34** : 301.
1922 *Chalcaspis phenacocci* (Ashmead) Timberlake, *Proc. Hawaii ent. Soc.* **5** (1) : 170.

Frontovertex with reticulate microsculpture regular, very fine, very comfortably discernible × 65; with orbital piliferous punctures small, separated by about their own diameters, and punctures near median ocellus relatively small, well separated.

Antenna with scape over five times length of its greatest breadth, slightly expanded to about middle, almost parallel-sided beyond this; with pedicellus over two and a half times length of its greatest breadth; with funicle segments cup-shaped to cylindrical, the sixth one and a third times as broad as long, and club one-third longer than combined funicle segments.

Mesoscutum with reticulate microsculpture rather fine, beset with rather sharp piliferous punctures that are separated by rather less to rather more than their own diameters; axillae and scutellum rather dull, with reticulate microsculpture of moderate strength, beset with piliferous punctures that are smaller and denser, mostly separated by less than their own diameters, and not so shallow as in *arizonensis* Grlt. (Text-fig. 53).

Fore wing with fore margin moderately emarginate at apex of costal cell, very weakly emarginate beyond postmarginal: radial and postmarginal stouter than in *pergandei* How.: radius decidedly curved and with stigma scarcely broadened, extending not quite as far as tip of postmarginal, the rather narrow hyaline streak sloping outward to the wing margin.

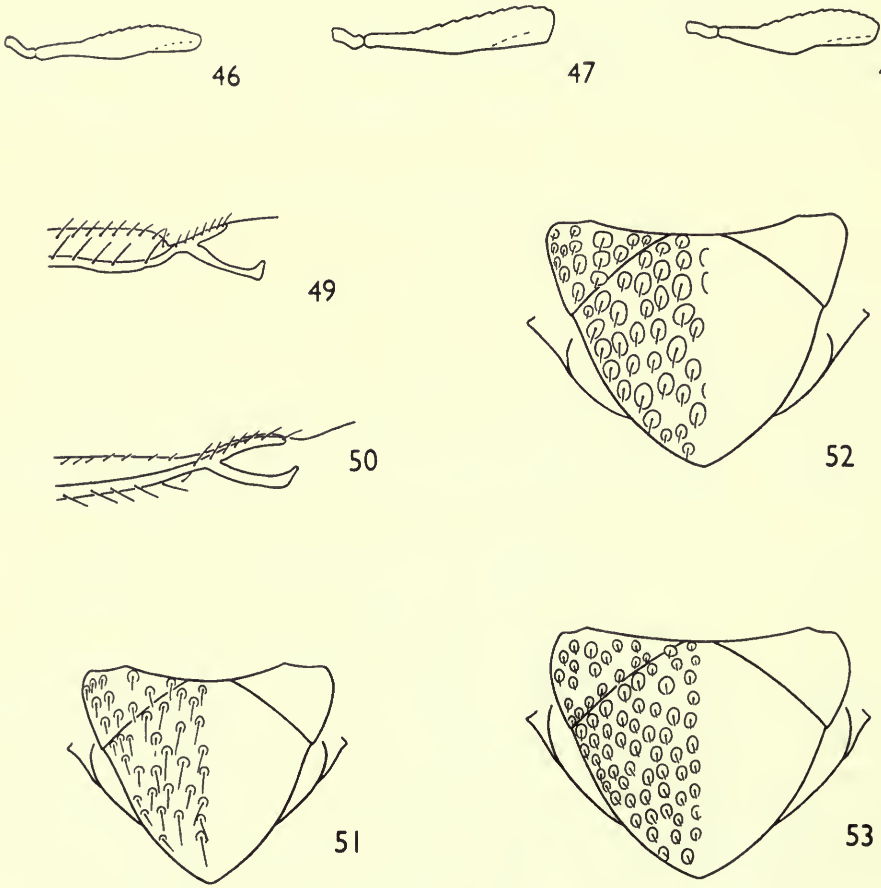
Head coppery, with punctures and marginal parts brassy green. Dorsum of thorax dull blue-green, with indefinite bright to dull bronzy reflections. Pleura and propodeum above steely blue to green: gaster a brighter blue-green, with moderate brassy to coppery reflections. Antennae having scape and funicle a more or less dull testaceous with dark marking; and having pedicellus blackish and club dull brown, both with metallic reflections. Leg coloration much as described for *arizonensis* Grlt., but the tarsi often extensively darkened at apex.

Redescribed from the following. U.S.A.: California, Rialto, 1 ♀, vi.1934, *ex Phenacoccus solani* Ferris (*Jourbert*), Riverside, 1 ♀, viii.1935, *ex P. solani* (*J. D. Maple*), Fontana, 1 ♀, 1953, *ex P. solani* (*Commonwealth Inst. Biol. Control*);

Colorado, Rocky Ford, 1 ♀, 20.viii.1909, "bred from Syrphid" (*H. O. Marsh*), Texas, Roma, 1 ♀, 23.x.1950 (*T. P. Chapman*). Material in U.S. National Museum and in British Museum (Natural History).

Key to Species of *CHALCASPIS* Howard : females

1 Postmarginal vein very much shorter than radial (Text-fig. 49): hyaline streak absent: marginal and postmarginal contiguous with costal margin: costal cell bearing, on upper surface only, a row of rather large hairs, comparable in size with the larger ones on postmarginal (Text-fig. 49): antennal scape with upper margin bowed downward much more strongly than in *arizonensis* Grlt. (cf. Text-fig. 48): antennal club markedly shorter than combined funicle segments: scutellum with piliferous punctures sharply marked and rather large but very shallow: African species . 2



Figs. 46–53. *Chalcaspis* species, females. 46–48. Right antennal scape, in dextro-lateral view, of 46, *lucidus* sp. n. ; 47, *pergandei* How. and 48, *arizonensis* Grlt. 49–50. Part of right fore wing of 49, African species A and 50, *pergandei* How. 51–53. Axillae and scutellum, seen from above, of 51, *lucidus* sp. n. ; 52, *pergandei* How. and 53, *phenacocci* (Ashm.).

Postmarginal and radial veins of similar length (Text-fig. 50): hyaline streak present: marginal and postmarginal not quite contiguous with costal margin: costal cell bearing, on upper and under surfaces, a row of very much smaller hairs (Text-fig. 50): antennal scape bowed downward as in *arizonensis* Grlt. (Text-fig. 48) or less strongly: antennal club markedly longer than combined funicle segments: scutellum with piliferous punctures markedly impressed: American species 3

2 Mesoscutum rather shallowly yet sharply piliferous-punctate, the punctures mostly separated by less than their own diameters: antennae infuscate, with weak metallic reflections: fore wings rather strongly infuscate in basal, and moderately so in apical half . . . . African species A

Mesoscutum beset with moderate piliferous punctures that mostly are separated by about their own diameters: antennae with scape and funicle yellow-testaceous, each a little darkened at base: fore wings moderately and more evenly infuscate African species B

3 Scutellum and axillae decidedly shining, with piliferous punctures relatively shallow, mostly separated by considerably more than their own diameters (Text-fig. 51): fore wings with radius almost rectilinear before the decidedly broadened stigma: Caribbean . . . . ***lucidus*** sp. n.

Scutellum and axillae much duller and with punctation otherwise: fore wings with radius decidedly curved, the stigma scarcely broadened: U.S.A. 4

4 Dorsum of thorax a fundamental brassy green with infusions of coppery to brassy: scutellum and axillae with piliferous punctures large and rather deep, almost in a loose reticulation (Text-fig. 52): fore wing margin rather strongly emarginate beyond postmarginal (Text-fig. 50) . . . . ***pergandei*** Howard

Dorsum of thorax dull blue-green, with weak bronzy reflections: scutellum and axillae with piliferous punctures relatively much smaller: fore wing margin moderately to weakly emarginate beyond postmarginal 5

5 Head with punctures on inter-ocellar area in a loose reticulation: scutellum and axillae with piliferous punctures rather shallow: antennal scape with upper margin markedly bowed downward before middle (Text-fig. 48): fore wing margin moderately but very distinctly emarginate beyond postmarginal: radius extending very slightly beyond postmarginal, the hyaline streak broad, perpendicular to the wing margin . . . . ***arizonensis*** Girault

Head with punctures on inter-ocellar area well separated: scutellum and axillae (Text-fig. 53) with piliferous punctures deeper: antennal scape with upper margin not markedly bowed downward before middle: fore wing margin very weakly emarginate beyond postmarginal: radius not extending quite as far as tip of postmarginal, the hyaline streak rather narrow, sloping outward to the wing margin ***phenacocci*** (Ashmead)

AENASIUS Walker, 1846

1846 *Aenasius* Walker, *Ann. Mag. nat. Hist.* (1) **18** : 181.
1937 *Aenasius* Walker ; Compere, *Proc. Hawaii. ent. Soc.* **9** (3) : 383–8.

Aenasius hyettus Walker

(Text-figs. 54, 59, 69)

1846 *Encyrtus hyettus* Walker, *Ann. Mag. nat. Hist.* (1) **18** : 181 [designated on same page as type-species of *Aenasius* Walker].

Head from above (Text-fig. 54) moderately long, median length about half breadth ; fronto-vertex about one-fifth total breadth ; in side view rather evenly curved to mouth ; in facial view (Text-fig. 59) with cheeks sharply narrowed to mouth : facial impression nearly half height of head, bordered by a distinct keel above and at sides. Frontovertex with microsculpture very fine, with orbital piliferous punctures distinct but small, and at narrowest with four rows of large punctures, which are relatively shallow, between these.

Mandibles slender, bidentate, the teeth about equal.

Antenna with scape (Text-fig. 69) about three-quarters longer (dorsally) than its greatest breadth, the lamina curving slightly inward from apex ; with pedicellus not much longer than apically broad ; with funicle segments rather short and broad, the first five saucer-shaped, the club longer than the combined funicle segments. Greatest width of scape 1·3 times narrowest width of frontovertex.

Pronotum, mesoscutum, axillae and scutellum finely reticulate, beset with moderate, shallow, piliferous punctures that mostly are separated by much more than their own diameters.

Fore wings with outer margin distinctly a little curved (i.e. not almost straight as in the species closest related to *caeruleus* Brues), and with anal angle moderately rounded : postmarginal extending almost to level of tip of uncus, the radial rather strongly curved : hyaline streak very distinct but narrow : costal cell bearing three rows of rather strong hairs.

Head blue-green to brassy green, with red-violet weakly on most of frontovertex, but more strongly above and at sides of facial impression, and also at sides of scrobes and across interscrobal prominence. Pronotum, mesoscutum, tegulae, axillae and scutellum dull blue-green, with weak bronzy reflections (thus in 19th century specimens, possibly stronger in recent material). Pleura, propodeum and gaster dull brown to brownish black, with moderate metallic reflections. Antennae blackish brown to brownish black, with weak metallic reflections. Legs brownish black, with weak metallic reflections, merging to testaceous brown : mid femora much paler at apex, mid tibiae almost whitish before apex, and mid and hind tarsi whitish except at apex.

Redescribed from the following material. ST. VINCENT: 1 ♀, Lansdown Guilding. GRENADA: windward side, 2 ♀, leeward side, Mount Gay Estate, 1 ♀ (*H. H. Smith*).

Holotype in University Museum, Oxford: two specimens in British Museum (Natural History) and one in U.S. National Museum.

This species is not known from reared material; but male specimens from Grenada, in the British Museum (Natural History) and the U.S. National Museum, from the series determined by L. O. Howard, have the antennae rather much as figured by Compere (1937), though the antennal club is clearly 3-segmented.

***Aenasius similis* sp. n.**

(Text-figs. 61, 70)

1937 *Aenasius hyettus* Walker ; Compere, *Proc. Hawaii. ent. Soc.* **9** (3) : 388–90, 395–7 [Misidentification].

Head from above moderately broad, median length to breadth = 1 : 2·0 to 2·2 ; frontovertex to total breadth = 1 : 4·1 to 4·8 ; in side view (Text-fig. 61) somewhat angled above sides of facial impression ; in facial view with cheeks narrowed at about half a right angle : facial impression about four-ninths height of head, bordered by a distinct keel above and at sides. Frontovertex with microsculpture extremely fine, with orbital piliferous punctures scarcely distinct above, and at narrowest with four rows of large, relatively shallow, punctures between them.

Mandibles slender, bidentate, the teeth about equal.

Antenna with scape (Text-fig. 70) about one-half longer (dorsally) than its greatest breadth, the lamina falling almost vertically at apex ; with pedicellus about a quarter longer than broad ; with funicle segments rather short and broad, the first four saucer-shaped, the club shorter than the combined funicle segments. Greatest width of scape 1·7 times narrowest width of frontovertex.

Pronotum, mesoscutum, axillae and scutellum finely reticulate, shining, regularly beset with rather small to moderate piliferous punctures that are separated by much more than their own diameters.

Fore wings as described for *hyettus* Walker.

Head colour as described for *hyettus* Walker. Pronotum, mesoscutum, tegulae, axillae and scutellum blue-green, with bronzy to red-violet reflections. Pleura, etc. as described for *hyettus* Walker. Antennae brownish black to blackish brown, with weak metallic reflections. Leg colour as described for *hyettus* Walker.

Holotype ♀. PANAMA: Montelirio, iii.1924 (*D. T. Fullaway*).

Paratypes the following. PANAMA: Montelirio, 1 ♀, v.1924, 2 ♀, iv.1924 and 1929, on banana, Barro Colorado, 1 ♀, viii.1932, on banana, unlocalized, 1 ♀, vii.1914 (*D. T. Fullaway*); Canal Zone, Paraiso, 1 ♀, 20.iii.1911 (*E. A. Schwarz*); Canal Zone, Summit, 2 ♀, Aquadulce, 1 ♀, xi.1946 (*N. L. H. Krauss*). GUATEMALA: 1 ♀, 20.vii.1934, on banana debris (taken at Philadelphia, U.S.A.). VENEZUELA: San Esteban, 1 ♀, xi.1939 (*Pablo Anduze*). PERU: Piura, 1 ♀ (reared at South American Parasite Lab.) (*P. A. Berry*).

Holotype in U.S. National Museum: paratypes in U.S. National Museum and in British Museum (Natural History).

Males taken with female specimens on banana in Panama have the antennal club solid. Compere's figure of the male antenna of *hyettus* Walker is most probably to be attributed to this species.

Aenasius maplei Compere

(Text-figs. 55, 62, 71)

1937 *Aenasius maplei* Compere, *Proc. Hawaii. ent. Soc.* **9** (3) : 384, 388–91, 397–8.

Head from above (Text-fig. 55) broad, median length to breadth = 1 : 2·3, with frons rather prominent, and facial impression in this view deep ; frontovertex relatively broad, to total breadth about 1 : 3·4, with ocelli in a slightly obtuse triangle (95°) ; in side view (Text-fig. 62) curved rather evenly to sides of facial impression and then bent round sharply to mouth region ; in facial view with cheeks decidedly rounded, sharply narrowed to mouth : facial impression about two-fifths height of head, bordered by distinct keels at sides but not above. Frontovertex with microsculpture of moderate strength, with orbital piliferous punctures very distinct, and at narrowest with four to five rows of coarse punctures between these.

Mandibles slender, bidentate, the upper tooth much the longer and broader.

Antenna with scape (Text-fig. 71) about one-half longer (dorsally) than its greatest breadth, the upper margin rising relatively steeply from base, the lamina bulging outward at apex ; with pedicellus not much longer than broad ; with first five funicle segments saucer-shaped but the sixth much longer, and club about one-half longer than the combined funicle segments. Greatest width of scape 0·9 to 1·1 times narrowest width of frontovertex.

Pronotum, mesoscutum, axillae and scutellum with reticulate microsculpture regular and strong, beset with piliferous punctures that are separated by about their own diameters and usually are very shallow.

Shape of fore wings as described for *personatus* sp. n. but the wings distinctly less broad. Veins relatively stout : postmarginal clearly not extending to level of tip of uncus, the radial distinctly curved : hyaline streak relatively narrow and with two or three small hairs intruding into it : costal cell bearing four rows of strong hairs.

Head blue-green, with reflections merging from brassy, in region of ocelli, through golden to bronzy ; and with weak red-violet coloration beside the facial impression and on genae.

Antennae brownish black to blackish brown, with bright reflections. Pronotum, mesoscutum, tegulae, axillae and scutellum steely green with indefinite bright reflections, more definitely bronzy at sides. Pleura, propodeum and gaster brownish black or paler, with bright reflections. Legs brownish black, merging to dark testaceous-brown, with metallic reflections, the mid tibiae moderately dark : mid and hind tarsi whitish, dark toward apex.

Redescribed from the following material. U.S.A.: California, Fillmore, 4 ♀, 6 and 25.iii.1936, *ex Puto yuccae* (Coq.) (*J. D. Maple*). Material in U.S. National Museum, Citrus Experiment Station, Riverside, and British Museum (Natural History).

The male has the facial impression bordered above by a sharp fold. The antenna was figured by Compere (1937, p. 384).

Aenasius personatus[2] **sp. n.**

(Text-figs. 56, 60, 72)

Head from above (Text-fig. 56) moderately broad, median length to breadth about 1 : 2·1 ; frontovertex to total breadth about 1 : 4·5 ; in side view curved evenly above, and then bent round sharply to mouth region ; in facial view (Text-fig. 60) with cheeks narrowed to mouth at about half a right angle : facial impression about one-third height of head, not distinctly keeled on upper margin but sharply so at sides : eyes less strongly divergent than in *hyettus* Walker. Frontovertex with reticulate microsculpture regular and of moderate strength, with orbital piliferous punctures moderate, and at narrowest with four rows of coarse punctures between these.

Mandibles slender, bidentate, the upper tooth longer and rather broader.

Antenna with scape (Text-fig. 72) about one-third longer (dorsally) than its greatest breadth, the lamina bulging outward at apex ; with pedicellus scarcely longer than broad ; with first five funicle segments saucer-shaped, the sixth decidedly longer, and club about one-half longer than the combined funicle segments. Greatest width of scape 1·8 times narrowest width of frontovertex.

Pronotum, mesoscutum, axillae and scutellum very finely reticulate, beset with shallow piliferous punctures that mostly are separated by about or rather more than their own diameters.

Fore wings with lower part of outer margin almost straight and with anal angle relatively sharp : postmarginal clearly not extending to level of tip of uncus, the radial slightly curved : hyaline streak present : costal cell bearing four or sometimes three, rows of rather strong hairs.

Head, for the most part, red-violet and blue-green, or sometimes almost blue : these colours vary in proportion, but generally the violet is on the ridges of the reticulations and in a band above the toruli, and the green in the punctures and on the less heavily sculptured parts : mouth region often more brassy. Pronotum, mesoscutum, tegulae, axillae and scutellum blue-green with strong red-violet reflection. Pleura, propodeum and gaster brownish black with pale metallic reflections, the gaster beneath and propodeum above paler, the propodeum in region of spiracles with brighter coloured reflections. Antennae brownish black, overspread with bright pale bronzy reflection. Legs brownish black, with weak metallic reflections, merging to testaceous-brown, the mid tibiae palest : mid metatarsi, except at apex, and first three hind tarsal segments, whitish.

Holotype ♀. U.S.A.: Florida, Hialeah, 24.viii.1953, on *Hibiscus tiliaceus* (*O. D. Link*).

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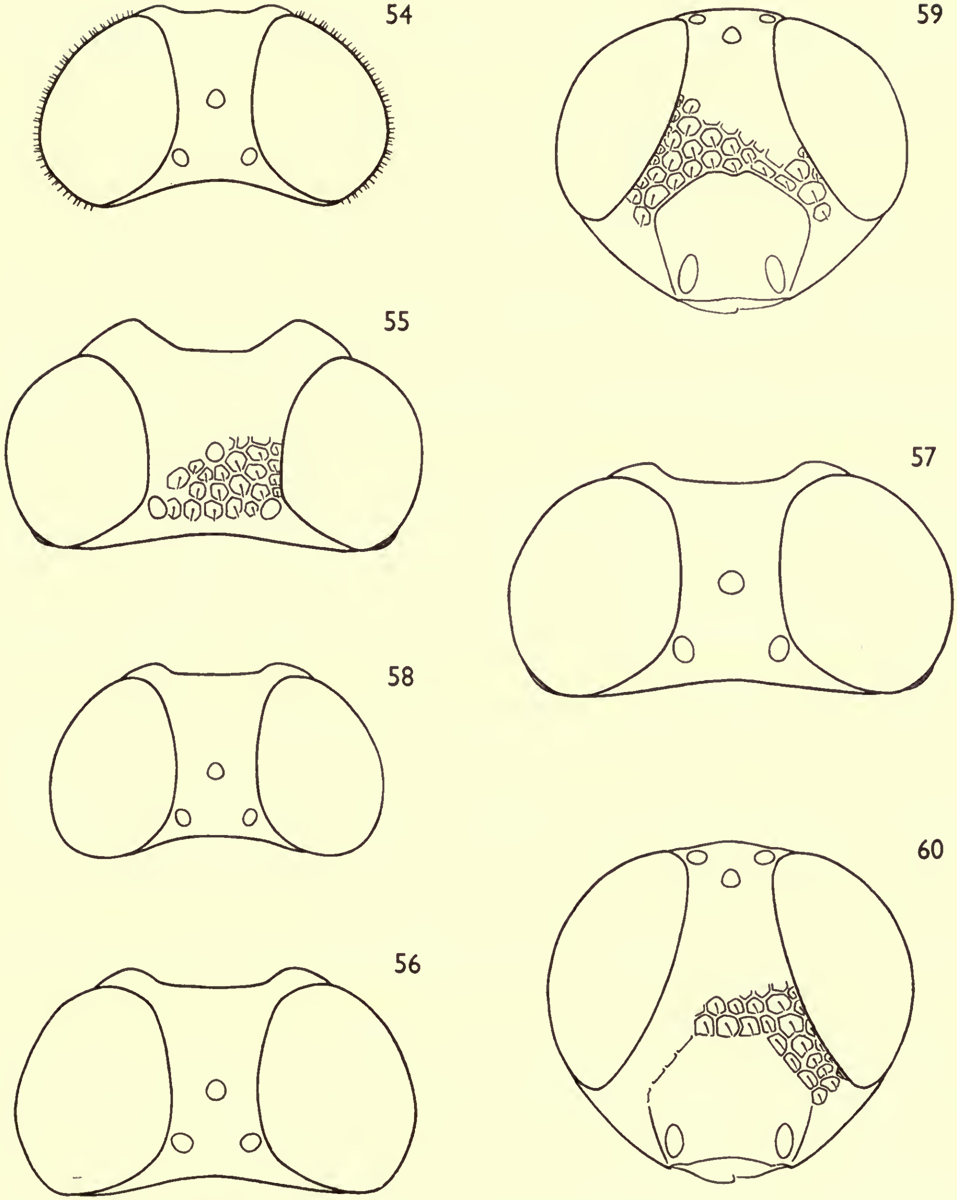
[2] Etym. " masked ", also the " masquerader ".



Figs. 54–60. *Aenasius* species, females. Head, seen from above, of 54, *Aen. hyettus* Walker ; 55, *Aen. maplei* Comp. ; 56, *Aen. personatus* sp. n. ; 57, *Aen. caeruleus* Brues and 58, *Aen. masii* Domen. Head, in facial view, of 59, *hyettus* Walk. and 60, *personatus* sp. n.

Paratypes the following. U.S.A.: 4 ♀ (same data as holotype). TRINIDAD: I.C.T.A., 1 ♀, v.1952, 1 ♀, vi.1953, 14 ♀, 6.ix.1953, *ex Ferrisia virgata* (Ckll.) on cacao, 2 ♀, ix.1953, San Juan, 1 ♀, 5.xi.1953, *ex Ferrisia* on *Gliricidia* (*F. D. Bennett*).

Holotype in U.S. National Museum: paratypes in U.S.N.M., Citrus Experiment Station, Riverside, Imperial College of Tropical Agriculture and British Museum (Natural History).

Aenasius caeruleus Brues

(Text-fig. 57)

1910 *Aenasius caeruleus* Brues, *Bull. Am. Mus. nat. Hist.* **28** : 84–85.
1937 *Aenasius caeruleus* Brues ; Compere, *Proc. Hawaii. ent. Soc.* **9** (3) : 388–90, 395.

Head from above (Text-fig. 57) decidedly broad, median length to breadth = 1 : 2·2 to 2·4 ; frontovertex to total breadth = 1 : 4·2 to 4·9 : in side view curved almost evenly to mouth : in facial view with cheeks narrowed to mouth at more than half a right angle : facial impression relatively shallow, about two-fifths height of head, not distinctly keeled on upper margin but sharply so at sides. Frontovertex with microsculpture regular and of moderate strength, with orbital piliferous punctures moderate, at narrowest with four rows of coarse punctures between them.

Mandibles conspicuous, bidentate,[3] the smaller lower tooth sharply ridged below.

Antenna with scape three-fifths longer (dorsally) than its greatest breadth, the lamina bulging outward at apex ; with pedicellus about one-third longer than broad ; with funicle segments very short and broad, saucer-shaped, and club about one-half longer than combined funicle segments. Greatest width of scape 1½ times narrowest width of frontovertex.

Pronotum, mesoscutum, axillae and scutellum with reticulate microsculpture rather fine, beset with rather shallow piliferous punctures that mostly are separated by less than their own diameters.

Fore wings as described for *personatus* sp. n.

The colour of the type and one other specimen may be described as follows : head for the most part red-violet and peacock blue, with bronzy reflections above the facial impression, and with blue-green coloration in region of malar space and on inter-scrobal prominence. Pronotum, mesoscutum, tegulae, axillae and scutellum red-violet and bronzy, with streaks and patches of blue-green. Pleura and propodeum pale brown with metallic reflections mostly very weak, strong and bright in region of propodeal spiracles : gaster blackish with strong metallic reflections. Antennae brownish black to blackish brown, with weak, mostly pale bronzy, reflections. Leg colour as described for *regularis* sp. n.

Four other specimens differ as follows : head and thorax above dominantly a very blue-green, sometimes brassy green in region of ocelli, with much red-violet, especially beside facial impression and on scutum and scutellum.

Redescribed from the following material. MEXICO: Vera Cruz, Santa Rosa, La Buena Ventura, 1 ♀, 13.vii (holotype) (*A. Petrunkevitch*). PORTO RICO: Mayaguez, on coffee, 1 ♀, 23.iv.1936 (*M. R. Smith*). PANAMA, Canal Zone, Paraiso, 2 ♀, 6.ii.1911 (*E. A. Schwarz*). VENEZUELA: Barinas, 1 ♀, i.1943 (*P. Anduze*). URUGUAY: Montevideo, S. Amer. Parasite Lab., 1 ♀, 31.vii.1942 (*P. A. Berry*).

Holotype in American Museum of Natural History, other specimens in U.S. National Museum and in British Museum (Natural History).

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[3] Brues described the mandibles as having three teeth, but I believe him to have been mistaken. The mandibles are piliferous and have, on the upper surface (i.e. nearest the clypeus) a few smaller hairs which, according to the angle of viewing, can create the impression of a minute, set-back, uppermost tooth.

Aenasius regularis sp. n.

(Text-fig. 73)

Head from above broad, mostly a little broader than in *personatus* sp. n. and in well developed specimens sharply menisciform; median length to breadth = 1 : 2·0 to 2·1; frontovertex to total breadth about 1 : 4·3 : in side view curved evenly above, then bent round, but not sharply, to mouth region; in facial view with cheeks rather sharply narrowed to mouth: facial impression about one-third height of head, not distinctly keeled on upper margin though sharply so at sides. Frontovertex with microsculpture regular, rather fine; with orbital piliferous punctures moderate; at narrowest with four rows of coarse punctures between these.

Mandibles slender, bidentate, the upper tooth rather the broader.

Antenna with scape (Text-fig. 73) about three-fifths longer (dorsally) than its greatest breadth, the lamina bulging outward at apex; with pedicellus about one-half longer than broad; with funicle segments very short and broad, saucer-shaped, the club nearly twice as long as the combined funicle segments. Greatest width of scape 1¼ times narrowest width of frontovertex.

Pronotum, mesoscutum, axillae and scutellum with reticulate microsculpture regular and of moderate strength, regularly beset with rather small and ill-defined piliferous punctures that are separated by much more than their own diameters.

Shape of fore wings as described for *personatus* sp. n.: postmarginal extending very nearly to level of tip of uncus, the radial distinctly curved: costal cell bearing only two rows of strong hairs, the remaining hairs much smaller.

Head blue-green, bronzy on ridges of reticulations, and with red-violet coloration on genae and in a band above the toruli. Pronotum, mesoscutum, tegulae, axillae and scutellum dull blue-green, with bright bronzy, or in part red-violet, reflections. Pleura, etc. as described for *personatus* sp. n. Antennae brownish black, with weak metallic reflections. Leg colour as described for *personatus* sp. n., but the hind tarsi a little darkened above.

Holotype ♀. TRINIDAD: I.C.T.A., iv.1952, *ex Ferrisia virgata* (Ckll.) on cacao (*F. D. Bennett*).

Paratypes the following. TRINIDAD: I.C.T.A., 14 ♀, 1952–53, *ex Ferrisia virgata* (Ckll.) on cacao, 1 ♀, v.1953 on guava, 4 ♀, v.1953, *ex Ferrisia* on guava, 2 ♀, vi–ix. 1953, *ex Ferrisia* on *Gliricidia* (*F. D. Bennett*). SALVADOR: Rosario, Cuscattan, 1 ♀, 1955 (*P. A. Berry*).

Holotype and paratypes in British Museum (Natural History), paratypes in U.S. National Museum, in Citrus Experiment Station, Riverside, California, and in Imperial College of Tropical Agriculture.

Aenasius punctatus Compere

(Text-fig. 74)

1937 *Aenasius punctatus* Compere, *Proc. Hawaii. ent. Soc.* **9** (3): 388–9, 391, 394–5.

Head, pro- and mesothorax, and to a lesser extent metathorax, propodeum and sides of gaster with reticulate microsculpture very strong and regular: this gives the species a velvety appearance which is in striking contrast with that of its shining congeners.

Head from above relatively long, median length about half breadth; frontovertex to total breadth = 1 : 3·7; with ocelli in a decidedly to moderately acute triangle; in facial view with cheeks strongly curved, narrowed to mouth at more than half a right angle; in side view rather long and strongly curved: facial impression about two-fifths height of head, not bordered by a distinct keel above or at sides. Frontovertex with orbital piliferous punctures small, but very distinct and regular, and at narrowest with four rows of large punctures, which are relatively clear-cut and deep, between these.

Mandibles slender, bidentate.

Antenna with scape (Text-fig. 74) twice as long (dorsally) as its greatest breadth, the lamina bulging very slightly outward at apex ; with pedicellus about as long as broad ; with first five funicle segments saucer-shaped, the sixth a little longer, and club about 1·3 times length of combined funicle segments. Greatest width of scape 0·9 times narrowest width of frontovertex.

Pronotum, mesoscutum, axillae and scutellum beset with rather strong piliferous punctures that mostly are separated by much less than their own diameters. Propodeum with spiracles large and sub-circular.

Fore wings relatively narrow, with outer margin strongly curved and anal angle strongly rounded : marginal vein relatively very short, the postmarginal extending about to tip of uncus or beyond it, the radial stout, a little curved : hyaline streak from tip of uncus absent : speculum not free of small hairs : prebasal area regularly beset with hairs which are not so very much larger than those on postbasal area and do not tend so much to be in distinct rows as in other species, the costal cell rather similar.

Head a medium green, with brassy and bronzy reflections, and with some red-violet coloration especially beside the facial impression and on genae. Pronotum, mesoscutum, axillae and scutellum a medium green, usually with bronzy to red-violet reflections : mesopleura and sides of propodeum usually much like mesoscutum but sometimes paler : tegulae usually paler, often in part quite a pale brown. Gaster beneath and on sides much like mesopleura, though sometimes paler ; on its smooth upper surface blackish to brownish, with bronzy to purplish reflections. Antennae brownish black to blackish brown, with metallic reflections, the lamina of scape strongly shining, the remainder of antenna much less so : scape and pedicellus above sometimes a dull green. Legs with coxae coloured about like mesopleura : fore and hind femora and tibiae in part similar, but paler : legs otherwise brownish, the mid and hind tarsi whitish, dark at apex.

Redescribed from the following material. BRAZIL: São Paulo, Orchidarum, *ex Phenacoccus* sp. on *Tabouchina granulosa*, 1 ♀ (paratype), 5.xi.1934 (*H. Compere*); Limeira, 1 ♀, 3.vii.1958 (*S. Flanders*). URUGUAY: Montevideo, Carrasco, 1 ♀, *ex Pseudococcus* sp., 1943, 2 ♀, ex leaf galls on *Baccharis*, 21.v.1943 (*H. L. Parker*); S. Amer. Parasite Lab., 1 ♀, 24.v.1946 (*P. A. Berry*). Material in U.S. National Museum, Citrus Experiment Station, Riverside, and British Museum (Natural History).

***Aenasius vexans* sp. n.**

(Text-fig. 63)

Head from above moderately broad, median length about half breadth ; frontovertex about a quarter total breadth ; in side view rather long and strongly curved (Text-fig. 63) ; in facial view with cheeks narrowed to mouth at more than half a right angle ; facial impression over two-fifths height of head, bordered by a distinct keel above but not at sides. Frontovertex sculpture as described for *hyettus* Walker.

Mandibles slender, bidentate, the upper tooth a little the longer.

Antenna with scape one-half longer (dorsally) than its greatest breadth, the lamina bulging very slightly outward at apex ; with pedicellus a little longer than broad ; with first four funicle segments saucer-shaped, the fifth and sixth longer, and club one-fifth longer than the combined funicle segments. Greatest width of scape 1·1 times narrowest width of frontovertex.

Pronotum, mesoscutum, axillae and scutellum finely reticulate, beset with shallow piliferous punctures that mostly are separated by rather more than their own diameters on mesoscutum, and are rather sparser on scutellum.

Fore wings relatively narrow, with outer margin strongly curved and with anal angle very well rounded : postmarginal extending beyond tip of uncus, the radial hardly curved : hyaline streak absent : costal cell narrow, bearing two rows of strong hairs.

Head blue-green with much red-violet coloration. Pronotum, mesoscutum in greater part, axillae and scutellum blue-green with bright reflections and sometimes with red-violet coloration : tegulae and sides of mesoscutum pale brown, with weak metallic reflections. Pleura, propodeum and gaster pale brown, darkened in part, with weak metallic reflections. Antennae brownish black to blackish brown, with bright metallic reflections, the scape distinctly pale at apex above. Legs usually paler than in most species, from blackish brown on coxae, merging to pale testaceous : mid and hind tarsi usually whitish, dark towards apex.

Holotype ♀. Brazil, São Paulo, xii.1935, *ex Phenacoccus* sp. (*E. Hambleton*). Paratypes the following. Brazil, São Paulo, 1 ♀, 28.xii.1934, *ex Phenacoccus* sp. on *Bougainvillea*, 1 ♀, xii.1935, *ex Phenacoccus* sp. (*E. Hambleton*). Mexico, Magdalena Is., Tres Marias, ♀, 26.v.1925 (*H. H. Kiefer*).

Holotype ♀ in U.S. National Museum, paratypes in collection of Citrus Experiment Station, Riverside, and in British Museum (Natural History).

Aenasius phenacocci Bennett

(Text-fig. 75)

1957 *Aenasius phenacocci* Bennett, *Can. Ent.* **89** (12) : 569–70.

Head from above rather long, median length to breadth = 1 : 1·7 to 2·0 ; frontovertex about a quarter total breadth ; in side view rather strongly and evenly curved, though more strongly just above side of facial impression : face rather long, with cheeks narrowed to mouth at about half a right angle : facial impression about two-fifths height of head, not bordered by a distinct keel above or at sides. Frontovertex with microsculpture extremely fine : head sculpture otherwise as described for *hyettus* Walker.

Mandibles bidentate, the upper tooth the longer and broader.

Antenna with scape (Text-fig. 75) one-half longer (dorsally) than its greatest breadth, the lamina curving inward from apex ; with pedicellus one-half longer than broad ; with funicle segments short and broad, the club about one-half longer than the combined funicle segments. Greatest width of scape 1·1 times narrowest width of frontovertex.

Pronotum, mesoscutum, axillae and scutellum very finely reticulate, somewhat shining, beset with shallow piliferous punctures that are separated by about their own diameters on mesoscutum but are sparser on scutellum, especially near apex. Propodeum with spiracles broad-oval to sub-circular and very large.

Fore wings with outer margin distinctly curved and with anal angle well rounded : post-marginal clearly not extending to level of tip of uncus, the radial slightly curved : hyaline streak absent : costal cell bearing three rows of rather strong hairs.

Head blue-green, in part brassy green, with some red-violet coloration near facial impression, sometimes much more widespread : mouth region more bronzy. Pronotum, mesoscutum, tegulae, axillae and scutellum blue-green, with reflections weak but bright. Pleura, propodeum and gaster brownish black, with moderate metallic reflections. Antennae blackish brown, overspread with bright, pale bronzy reflection, the scape and pedicellus very distinctly pale brown, sometimes almost whitish, at apex. Leg colour much as described for *hyettus* Walker, but the whitish parts infused with pale brown.

Redescribed from the following. St. Vincent, 1 ♀ (*H. H. Smith*), (mixed with *hyettus* Walk. in Brit. Mus. coll.). Trinidad, I.C.T.A., 2 ♀, v.1955, *ex Phenacoccus gossypii* Towns. & Ckll. on *Acalypha*; 11 ♀, v.1953, *ex P. gossypii* on *Hibiscus*; St. Augustine, 3 ♀, iii.1961, " ex mealybugs " (*F. D. Bennett*). British Guiana, Georgetown, 3 ♀, 15.x.1961, " on ornamentals " (*F. D. Bennett*). Material in

Imperial College of Tropical Agriculture, Trinidad, in Citrus Experiment Station, Riverside, in U.S. National Museum and in British Museum (Natural History).

This and the two following species are very closely related.

Aenasius masii Domenichini

(Text-fig. 58)

1951 *Aenasius masii* Domenichini, *Boll. Zool. agr. Bachic.* **17** (3) : 168–71.

Head from above (Text-fig. 58) decidedly broad, median length to breadth = 1 : 2·1 to 2·3 ; frontovertex to total breadth = 1 : 4·6 to 4·9, with ocelli in an acute triangle ; in side view more strongly curved above than in middle : face rather long, with cheeks narrowed to mouth at about or less than half a right angle : facial impression about half height of head, not bordered by a distinct keel above or at sides. Frontovertex with microsculpture of moderate strength ; with orbital piliferous punctures small, and at narrowest with three or four rows of coarse punctures between these, the coarse punctation irregular and relatively deep.

Mandibles bidentate, the upper tooth the longer and broader.

Antenna with scape one-half longer (dorsally) than its greatest breadth, the lamina curving well inward from apex ; with pedicellus about one-half longer than broad ; with first five funicle segments saucer-shaped, the sixth longer, and club about one-half longer than the combined funicle segments. Greatest width of scape 1·5 times narrowest width of frontovertex.

Pronotum, mesoscutum, axillae and scutellum with reticulate microsculpture regular and rather strong, beset with piliferous punctures that mostly are separated by about or rather less than their own diameters on mesoscutum but are rather sparser on scutellum.

Shape of fore wings as described for *phenacocci* Bennett : postmarginal reaching nearly as far as tip of uncus, the radius moderately curved : hyaline streak absent (or only indicated) : costal cell bearing three rows of rather strong hairs.

Head for the most part red-violet with some bronzy reflections, and with patches of green and blue in region of ocelli and lower part of inter-scrobal prominence, or more widespread. Pronotum, mesoscutum, tegulae, axillae and scutellum a dull, steely to olive-green, with bronzy to red-violet reflections. Pleura, propodeum and gaster blackish or paler, with metallic reflections. Antennae blackish brown with weak, mostly pale bronzy, reflections, the scape sometimes paler at extreme apex. Legs darker coloured than in most known members of the *hyettus* group, mostly deep brownish black with metallic reflections, including even the mid tibiae : mid femora sometimes mostly pale brown : mid and hind tarsi whitish with infusion of pale brown, dark at apex.

Redescribed from the following. PERU, Valle Carabayllo, 1 ♀ (paratype) " parassita di *Pseudococcus citri* e *P. maritimus* " (*J. Lamas*); Canete, 1 ♀, 10.v.1941 (*P. A. Berry*). Material in collection of G. Domenichini and in U.S. National Museum.

Aenasius flandersi sp. n.

Head from above decidedly broad, median length to breadth = 1 : 2·0 to 2·4 ; frontovertex a quarter the total breadth ; in side view much as in *masii* Domen. ; in facial view with cheeks narrowed to mouth at more than half a right angle : facial impression about one-third height of head, not bordered by a distinct keel above or at sides. Frontovertex with microsculpture of moderate strength ; with orbital piliferous punctures small, and at narrowest with about four rows of relatively shallow, coarse punctures between them, not so irregular as in *masii* Domen.

Mandibles slender, bidentate, the upper tooth broader and much the longer.

Antenna with scape one-half longer (dorsally) than its greatest breadth, the lamina curving well inward from apex ; with pedicellus moderately longer than broad ; with first four funicle segments saucer-shaped, the fifth and sixth longer, and club slightly longer than the combined funicle segments. Greatest width of scape equal to that of frontovertex.

Pronotum, mesoscutum, axillae and scutellum with reticulate microsculpture regular and of moderate strength, beset with piliferous punctures that are separated by about their own diameters on mesoscutum but are much sparser on scutellum.

Fore wings with outer margin more curved and anal angle more rounded than in *phenacocci* Bennett : postmarginal not reaching level of tip of uncus, the radial moderately curved : hyaline streak absent : costal cell bearing four rows of rather strong hairs.

Head blue-green, with reflections brassy to bronzy, and with some red-violet coloration on genae. Pronotum, mesoscutum, tegulae, axillae and scutellum dull blue-green to steely green, with indefinite metallic reflections. Pleura, propodeum and gaster blackish, with bright reflections. Antennae brownish black, with bright metallic reflection, the scape very distinctly pale at apex. Leg colour much as described for *masii* Domen., or rather paler.

Holotype ♀. U.S.A.: California, San Diego, Balboa Park, 15.viii.1958 on *Pittosporum* (*S. Flanders*).

Paratypes. PERU: unlocalized, 3 ♀, 10.vi.1958, ex mealybug on cotton (*S. Flanders*); Canete, 9 ♀, v–vi.1941, ex caged cotton buds (*P. A. Berry*), 2 ♀, (no further data) (*E. J. Hambleton*); Piura, 1 ♀ (*P. A. Berry*). URUGUAY, Montevideo, 1 ♀, 24.viii.1942 (*P. A. Berry*).

Holotype in U.S. National Museum, paratypes in U.S. National Museum, in Citrus Experiment Station, Riverside, and in British Museum (Natural History).

Aenasius connectens sp. n.

(Text-figs. 64, 76, 83)

Head, seen from above, moderately long, median length to breadth = 1 : 1·9 ; frontovertex over a quarter total breadth ; in side view (Text-fig. 64) more strongly curved below than above middle, and bent round rather sharply from sides of facial impression to mouth region : facial impression about two-fifths height of head, decidedly broad (Text-fig. 83), bordered by a distinct keel above but not at sides. Frontovertex dull, with microsculpture fine to moderate, with orbital piliferous punctures small and rather indistinct, and at narrowest with four rows of coarse punctures, which are not very shallow, between these : one to two rows of large punctures descend between eye and facial impression, and do not nearly reach the malar line (Text-fig. 83).

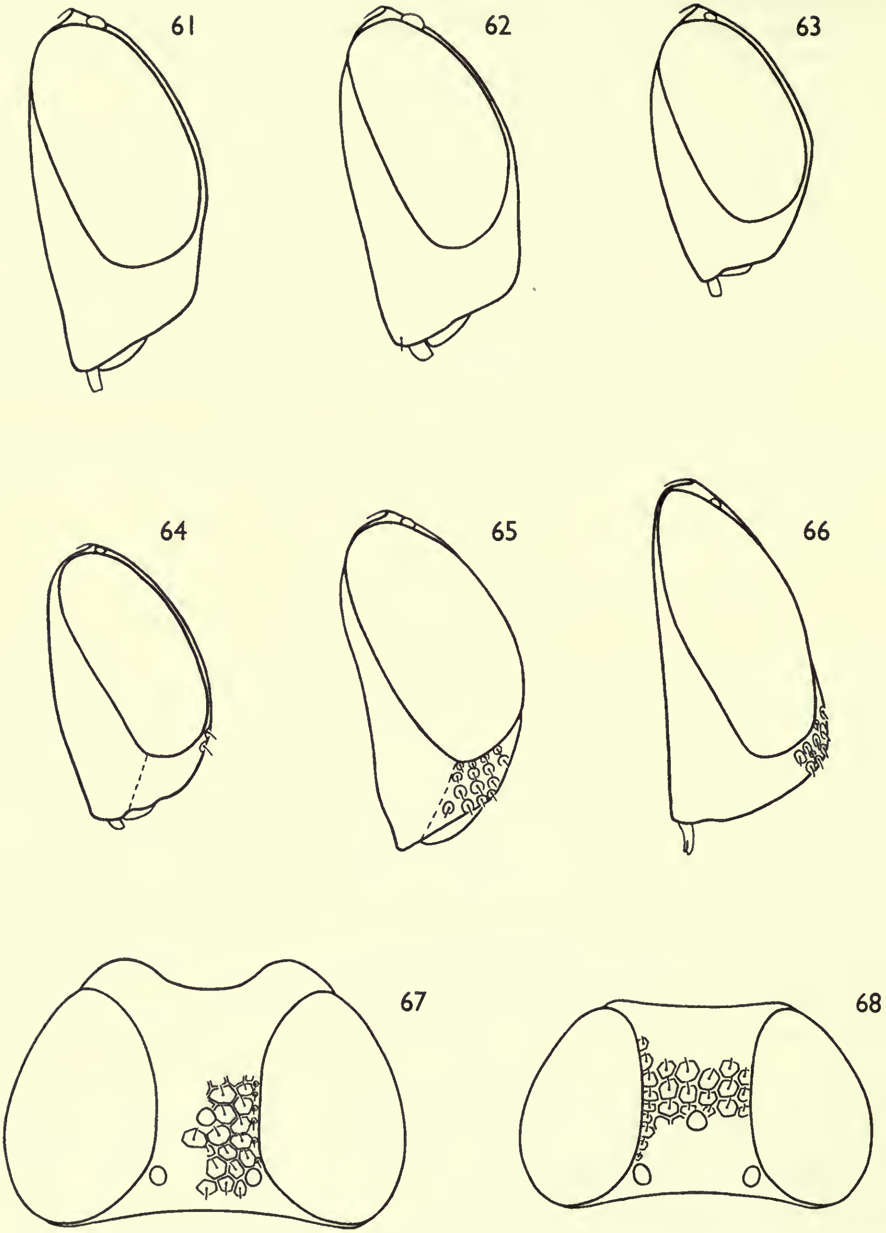
Antenna with scape (Text-fig. 76) about three-fifths longer than its greatest breadth, the lamina falling almost vertically at apex ; with pedicellus one-half longer than apically broad ; with first three funicle segments saucer-shaped, the remainder short-cylindrical, the sixth three times as broad (apically) as long, the club about one-fifth longer than combined funicle segments.

Mandibles bidentate, the upper tooth slightly the longer and larger.

Pronotum, mesoscutum, tegulae, axillae and scutellum with reticulate microsculpture regular and strong, beset with weak piliferous punctures that mostly are separated by more than their own diameters.

Fore wings with outer margin strongly curved and anal angle strongly rounded ; costal cell sub-parallel almost to apex, where the wing margin is sharply incised : marginal vein relatively short, the postmarginal extending well beyond tip of uncus, the radial emitted at a very acute angle, slightly curved : hyaline streak absent : costal cell bearing two rows of strong hairs on upper surface, the remaining hairs much smaller.

Head blue-green, with brassy to coppery reflections strongest above, and with red-violet strongest above the facial impression. Pronotum blue-green, mesoscutum duller, and axillae and scutellum still duller, with bright reflections which are more definitely bronzy to red-violet on scutellum. Postspiracular sclerite pale testaceous-brown ; mesopleura and sides of propodeum duller, and having dark patches bearing weak metallic green reflection : propodeum above and gaster dark brown, largely overspread with dull blue-green. Antennae blackish brown,



FIGS. 61–68. *Aenasius* species, females. 61–66. Head, in dextro-lateral view of 61, *Aen. similis* sp. n. ; 62, *Aen. maplei* Comp. ; 63, *Aen. vexans* sp. n. ; 64, *Aen. connectens* sp. n. ; 65, *Aen. advena* Comp. and 66, *Aen. frontalis* Comp. 67–68. Head, seen from above, of 67, *Aen. frontalis* Comp. and 68, *Aen. cariocus* Comp. f. *theobromae* Kerrich (drawn from holotype of *theobromae*).

with metallic reflections, the scape on outer side and pedicellus above distinctly green : scape and pedicellus narrowly at apex, and funicle segments 4 and 5 pale yellow-testaceous, the first three and sixth funicle more or less dusky. Legs having coxae and trochanters dull brown with green metallic reflections, merging to pale testaceous-brown : mid tibiae dark at apex and mid tarsi largely whitish.

Holotype ♀. URUGUAY: near Montevideo, S. American Parasite Lab., reared 24.v.1946 (*P. A. Berry*).

Paratype. URUGUAY: 1 ♀ (same data as holotype).

Holotype in U.S. National Museum: paratype in British Museum (Natural History).

This species forms a clear connecting link between *advena* Comp. and the group composed of *paulistus* Comp. and *insularis* Comp. It shares with *paulistus* and *insularis* the incision of the fore margin of the wing at the apex of the costal cell, the broad facial impression, and the feature of the large punctures not descending to near the malar line, though they do descend further than in those species. It differs from them most notably in having the frontovertex relatively narrow, with the ocelli in an obviously acute triangle, the facial impression sharply bordered above, and the mandibles not tridentate. The broadly laminate antennal scape places it near *advena* Comp., whereas *paulistus* and *insularis* have the scape of a form not found in any other known species (cf. Text-fig. 79).

Aenasius advena Compere

(Text-figs. 65, 77, 84)

1937 *Aenasius advena* Compere, *Proc. Hawaii. ent. Soc.* **9** (3) : 384, 388–9, 393.

1937 *Aenasius ianthinus* Compere, *Ibidem*: 388, 391, 393–4, here considered as variety of the above, **stat. n.**

Head, seen from above, more or less broad, breadth at least about twice median length, about 2·3 times in best developed specimens ; frontovertex about one-fifth total breadth ; in side view (Text-fig. 65) rather evenly curved to mouth ; facial impression about one-third height of head, narrow, especially narrowed above, not bordered by a distinct keel above or at sides (Text-fig. 84). Frontovertex with microsculpture very fine, with orbital piliferous punctures small but regular, and at narrowest with four rows of large punctures, which are relatively shallow, between these : two to three rows of large punctures descend between eye and facial impression, and nearly reach the malar line.

Antenna with scape (Text-fig. 77) 1·5 times to nearly twice as long as its greatest breadth, the lamina curving strongly inward from apex ; with pedicellus about twice as long as apically broad ; with funicle segments more short-cylindrical than saucer-shaped, the sixth three times as broad (apically) as long, the club one-half longer than the combined funicle segments. Greatest width of scape 0·9 times narrowest width of frontovertex.

Mandibles bidentate, the upper tooth the longer and broader.

Pronotum, mesoscutum, axillae and scutellum with reticulate microsculpture regular and rather strong, beset with piliferous punctures that mostly are separated by about their own diameters on mesoscutum but are sparser on scutellum.

Fore wings with lower part of outer margin moderately curved, with anal angle rather sharp : postmarginal clearly not extending to level of tip of uncus, the radial emitted at a relatively acute angle, slightly curved : hyaline streak absent : costal cell bearing usually four rows of rather strong hairs.

Coloration of the type series and of similar specimens is as follows : head blue-green, in large part with brassy reflections, around median ocellus more coppery and golden ; with a little red-violet before occipital margin and on hinder genae. Pronotum blue-green, with red-violet especially on shoulders : mesoscutum, tegulae, axillae and scutellum more a steely green, with indefinite bright reflections. Pleura, propodeum and gaster blackish or paler, with bright reflections. Antennae blackish brown, with metallic reflections : scape and pedicellus at apex, and first four, or sometimes only three, segments pale yellow-testaceous : pedicellus often distinctly green above. Legs brownish black, the mid legs rather paler : tarsi testaceous to whitish, dark at apex.

Specimens attributed to var. *ianthinus* Compere are coloured as follows : head a much deeper blue-green, with a triangular red-violet mark extending forward from occiput between ocelli, and with red-violet strong above, beside and to some extent across the facial impression, and on genae : brassy reflections on frontovertex absent, or weak and indeterminate. Red-violet coloration strong on scutellum and strong to very strong on scutum.

Compere (1937) described this form as a species, though he wrote that it was structurally much like *advena* Compere and might be a variant of it. I now know numerous intermediate colour gradations and find, moreover, that the colour is not always approximately constant in all specimens of a reared series. In consequence, the form is here reduced to varietal status. Dr. B. D. Burks has compared the type with several colour forms and with reference to my manuscript description, and he concurs.

Redescribed from the following material. BRAZIL: Bahia, São Salvador, 1 ♀, 4.x.1934, *ex Pseudococcus* on *Macquilla tomentosa* (*H. Compere*); unlocalized, 1 ♀, 1953, "*ex* B526" (*D. C. Lloyd*) (propagated at Riverside by *S. Flanders*); Rio de Janeiro, 2 ♀, 27.x.1962, 1 ♀, iii.1963, on citrus (*A. Perachi* & *F. D. Bennett*). TRINIDAD: I.C.T.A., 3 ♀, 1952–53, *ex Ferrisia virgata* (Ckll.) on cacao, 7 ♀, viii.1953, *ex Ferrisia* on *Gliricidia*, Toco, 1 ♀, v.1953, Manzanilla, 8 ♀, v–vi.1952–53, *ex Ferrisia virgata* on cocoanut (*F. D. Bennett*). PANAMA: 7 ♀, 23.iv.1911 (*E. A. Schwarz*). ST. THOMAS: Charlotte Amalie, 1 ♀, 31.v.1917, "parasite of Pseudococcus virgatus" (*H. Morrison*). PORTO RICO: Isabela, 1 ♀, 27.ix.1935, on mealybug (*L. C. Fife*). MEXICO: "Laredo POE", 1 ♀, 17.iv.1953 (*Baker*). HAWAII: Oahu, Koko Head, 1 ♀, 13.ii, 1 ♀, 27.ii., 1 ♀, 15.iii.1934 (*O. H. Swezey*) (paratypes); Honolulu, 1 ♀, 27.xii.1943 (*N. L. H. Krauss*); Johnston Is., 1 ♀, 1.vi.1952 (*K. L. Maehler*), 2 ♀, 8.vii.1948, on *Vitex trifolia* L. (*L. B. Laring*). FIJI: Naduruloulou, 4 ♀, ii.1949, ex mealybug on *Albizzia lebbek* (*B. A. O'Connor*). PHILIPPINES: Manila, 3 ♀, xii.1958, on guava (*Krauss*). MALAYA, Selangor, Rubber Research Institute, 2 ♀, ii.1958, Bukit Rotan, 2 ♀, 16.vii.1961, *ex Ferrisia virgata* (Ckll.) per (*A. Newsam*). E. PAKISTAN: Dacca, 2 ♀, 1963, *ex Ferrisia virgata* (Ckll.), per (*Government Entomologist*). INDIA: Madhya Pradesh, Jabalpur, 2♀, 25.xi.1966, *ex Ferrisia virgata* (Ckll.) (*B. N. Modi*). Material in U.S. National Museum, Citrus Experiment Station, Riverside, Imperial College of Tropical Agriculture and British Museum (Natural History).

This is the only species of the genus known to have a distribution extending outside the neotropical region and southern U.S.A. Specimens of quite typical coloration have been examined from Mexico, Hawaiian Islands and Philippines, specimens attributed to *var. ianthinus* from Brazil, West Indies and Hawaiian Islands.

Aenasius advena Compere var.

Small specimens : large punctures on frontovertex and punctures on mesoscutum abnormally shallow : antennal scape twice or just over twice as long as its greatest breadth : antennae with whole funicle a rich yellow-testaceous, with scape at least broadly at apex, and in one specimen also with club similarly coloured, having only weak infuscation.

Described from the following. U.S.A.: Florida, Key Largo, 2 ♀, 26.xii.1954 (*H. V. Weems* Jr.).

Aenasius frontalis Compere

(Text-figs. 66–67, 78)

1937 *Aenasius frontalis* Compere, *Proc. Hawaii. ent. Soc.* **9** (3) : 388–9, 391–2.

Head, seen from above (Text-fig. 67), elongate, median length to breadth = 1 : 1·8, with frontal emargination deep ; frontovertex between a fifth and a quarter the total head breadth, with ocelli in a moderately acute triangle (80°) ; in side view (Text-fig. 66) seen to be falling forward and then bent round at almost a right angle to mouth region : facial impression about one-third height of head, bordered by a sharp keel above and at sides. Frontovertex strongly shining, with microsculpture very fine to rather fine, with orbital piliferous punctures quite small but regular, and at narrowest with four rows of large punctures, which are coarse but usually rather shallow between these : two rows of large punctures descend between eye and facial impression, and rather nearly reach the malar line.

Mandibles bidentate, the upper tooth much the longer.

Antenna with scape (Text-fig. 78) 1·5 to 1·8 times length of its greatest breadth, the upper margin rising relatively steeply from base, the lamina curving well inward from apex ; with pedicellus twice as long as its apical breadth ; with funicle segments cup-shaped to short-cylindrical, the sixth about 2½ times as broad as long ; with club about 1½ times length of combined funicle segments.

Reticulate microsculpture fine on pronotum, sides of mesoscutum, tegulae and axillae, of moderate strength on scutellum, sharp and strikingly transverse on most of mesoscutum : mesoscutum and scutellum sharply beset with piliferous punctures that, except sometimes at sides, are separated by more, usually much more, than their own diameters.

Fore wings relatively rather narrow, with lower part of outer margin slightly emarginate and with anal angle relatively sharp : radial strongly curved, without a defined uncus, the postmarginal clearly not reaching level of its tip : hyaline streak present : costal cell bearing two rows of strong hairs, the remaining hairs much smaller.

Head bright blue-green to peacock-blue, with red-violet reflection, which is strongest beside the facial impression ; brassy-green before occipital margin, narrowly along orbits, and in region of mouth and toruli. Pronotum, mesoscutum, tegulae, axillae and scutellum a much duller blue-green than the head, sometimes almost a steely green, with red-violet and bronzy reflections especially at sides. Pleura, propodeum and gaster pale brown to brownish black, with reflections which on gaster in part and sides of propodeum are green. Antennae with scape in greater part, pedicellus and club brownish black, with bright metallic reflection : scape quite broadly at apex above, pedicellus at extreme apex, and funicle segments yellow-testaceous, the sixth funicle segment slightly darkened, or quite dark like the club. Legs with coxae and trochanters mostly blackish brown, with femora, tibiae and fore tarsi testaceous, often rather pale : mid and hind tarsi more whitened, dark toward apex.

Redescribed from the following material. PANAMA: Montelirio, 1 ♀, Taboga, 1 ♀, iii.1924 (*D. T. Fullaway*) (paratypes); Canal Zone, Paraiso, 1 ♀, iii.1911 (*E. A. Schwarz*). TRINIDAD: I.C.T.A., 1 ♀, v.1952, 2 ♀, 1952–53, *ex Ferrisia virgata* (Ckll.) on cacao (*F. D. Bennett*). Material in U.S. National Museum, Citrus Experiment Station, Riverside, and British Museum (Natural History).

Aenasius chapadae Ashmead

1900 *Aenasius chapadae* Ashmead, *Proc. U.S. natn. Mus.* **22** : 371.
1904 *Aenasius chapadae* Ashmead; Ashmead, *Mem. Carneg. Mus.* **1** (4) : 496, Pl. XXXVIII, fig. 1.
1937 *Aenasius chapadae* Ashmead ; Compere, *Proc. Hawaii. ent. Soc.* **9** (3) : 388, 394.

Thinking that the more bluish form of *frontalis* Comp. might be *chapadae*, I sent one such specimen in 1962 to Dr. B. D. Burks. He kindly compared it with the type, referring to my manuscripts, and replied that *chapadae* ran down in my key with *frontalis* but was not the same as the species sent. He kindly supplied the differentiating characters now incorporated in the key, adding that Ashmead's figure represented accurately the relative breadth of the frontovertex in *chapadae*.

Aenasius paulistus Compere

(Text-figs. 79, 85)

1937 *Aenasius paulistus* Compere, *Proc. Hawaii. ent. Soc.* **9** (3) : 385, 388–92, 401–3.

Head from above with median length to breadth = 1 : 2·0 to 2·2 ; frontovertex to total breadth = 1 : 3·3 to 3·6, with ocelli in about a right-angled triangle ; in side view rather long and almost evenly curved, almost as in *advena* Comp. (Text-fig. 65) : cheeks rather short and sharply narrowed : facial impression broad, about two-fifths height of head, not sharply bordered except beside lower half of toruli. Frontovertex with reticulate microsculpture fine, with orbital piliferous punctures rather strong, and at narrowest with five rows of large punctures, which are of fully normal depth, between them : large punctures descending not far below upper margin of facial impression (Text-fig. 85).

Mandibles obscurely tridentate, with an uppermost tooth much the smallest and well set back.

Antenna with scape (Text-fig. 79) two and a half times length of its greatest breadth ; with pedicellus nearly twice as long as broad ; with funicle segments short-cylindrical to broad saucer-shaped, the club 1·7 times length of the combined funicle segments.

Pronotum, mesoscutum, tegulae, axillae and scutellum with microsculpture rather fine, beset with piliferous punctures that on mesoscutum are regular, relatively deep, and mostly separated by about or rather less than their own diameters, but are shallower and sparser on axillae and scutellum. Propodeum with spiracles large, very broad-oval.

Fore wings with lower part of outer margin rather strongly curved, and anal angle well rounded : fore margin moderately incised at apex of costal cell (Compere, 1937, fig. 4) : marginal vein rather long, the postmarginal extending just beyond tip of uncus, the radial moderately curved : hyaline streak not fully developed (though it may be indicated) : costal cell bearing three rows of strong hairs on upper surface, the lower two merging in about distal half : wing infuscation fading out towards outer margin.

Head blue-green, with light brassy reflections ; sometimes bronzy around ocelli, in mouth region and on hinder genae. Pronotum, mesoscutum, tegulae, axillae and scutellum a duller blue-green, with considerable bronzy reflection. Sometimes there is much violet on the frontovertex, especially on the ridges of the reticulations, and much red-violet on pronotum and mesoscutum. Pleura, propodeum and gaster dull brown to brownish black, with moderate metallic reflections which in parts are blue-green. Antennae with scape largely, pedicellus at apex, and funicle segments yellow-testaceous ; with scape at base and along much of lower margin and part of upper margin, pedicellus mainly, and club blackish brown with green metallic reflections. Legs with coxae, trochanters, and femora in part brownish black, with metallic reflections, merging to dull testaceous on femora and tibiae : tarsi pale testaceous, darkened at apex.

Redescribed from the following. BRAZIL: São Paulo, 3 ♀, 4.xi.1934, with *Pseudococcus fragilis* Brain and *P. longispinus* Targ. (=*aonidum* auctt.) on *Hedera helix*, 1 ♀, 4.xii.1934 (*H. Compere*); São Paulo, 1 ♀, 28.xii.1934, *ex Phenacoccus* sp. on *Bougainvillea* (*E. Hambleton*). Material in collection of Citrus Experiment Station, Riverside and in British Museum (Natural History).

Aenasius insularis Compere

1937 *Aenasius insularis* Compere, *Proc. Hawaii. ent. Soc.* **9** (3) : 388–92, 400–1.

Head shape much as in *paulistus* Comp., but the cheeks more rounded : large punctures descending even less far below upper margin of facial impression (cf. Text-fig. 85), the impression similar in shape but very ill-defined at sides. Head median length about half breadth ; frontovertex to total breadth = about 1 : 3·6, with ocelli in about a right-angled triangle. Frontovertex with reticulate microsculpture fine, with orbital piliferous punctures small above, moderate below, and at narrowest with four to five rows of large punctures, which are relatively shallow, between them.

Mandibles as in *paulistus* Compere, obscurely tridentate.

Antenna with scape of the same general shape as in *paulistus* Compere but rather longer, over two and a half but well under three times length of its greatest breadth ; with pedicellus one and a half times to nearly twice as long as broad ; with funicle segments short cup-shaped to saucer-shaped, the club one and two-thirds times length of the combined funicle segments.

Pronotum, mesoscutum, tegulae, axillae and scutellum with microsculpture finer than in *paulistus* Comp., the piliferous punctures on mesoscutum rather shallower and mostly separated by more than their own diameters, and on axillae and scutellum quite shallow and sparse. Propodeum with spiracles transverse-oval, not abnormally large.

Fore wings much as described for *paulistus* Comp., but the costal cell sometimes bearing only two rows of strong hairs on upper surface : wing infuscation curving outward from apex of radial, leaving the wing very broadly hyaline by outer margin.

Head blue-green, with light brassy reflections, bronzy in part on frontovertex, mouth region and on hinder genae. Pronotum, mesoscutum, tegulae, axillae and scutellum with some blue-green, but scarcely discernible beneath the overspread of red-violet to bronzy. Coloration of pleura, propodeum and gaster as described for *paulistus* Comp., but the brown much paler in one small specimen. Antennal colour much as in *paulistus* Comp., but the club largely dull yellow-testaceous, pale blackish brown near base. Leg colour much as described for *paulistus* Comp.

MEXICO. Redescribed from two paratypes and one specimen with similar data.

***Aenasius nitens* sp. n.**

Head, seen from above, elongate, median length (measured from above scrobal impression) to breadth = 1 : 1·9 ; frontovertex relatively broad, to total breadth = 1 : 2·6, with ocelli in a decidedly obtuse triangle ; in side view very gently curved both above and below middle, where it is almost angled, then at level of toruli more sharply bent round to mouth region ; in frontal view with cheeks long and well rounded, with facial impression small, about a quarter the height of head, sharply margined at sides, and with inter-scrobal prominence broad, and so convex that it is visible when the head is viewed from above. Frontovertex strongly shining, with microsculpture so extremely fine as to be almost imperceptible × 65, with orbital piliferous punctures strong, and with larger punctures in a loose reticulation, four of them in transverse line with the median ocellus but a transverse row of six immediately in front of these : three rows of large punctures, merging to two, and the orbitals, descend between eye and facial impression and almost reach the malar line.

Mandibles bidentate, the upper tooth slightly the longer.

Antenna with scape 3·4 times length of its greatest breadth, broadest in basal third ; with pedicellus twice length of its greatest breadth ; with funicle segments cup-shaped to cylindrical, the sixth not twice as broad as long : club only moderately expanded from funicle, relatively elongate, 2½ times length of its greatest breadth and equal in length to funicle and pedicellus together.

Pro- and mesonota decidedly shining, though less strongly than the frontovertex : reticulate microsculpture on mesoscutum and axillae fine but very distinct, and on scutellum appreciably a little stronger : these sclerites sharply piliferous-punctate, the punctures separated by, on average, about their own diameters.

Fore wing narrow, with lower part of outer margin moderately emarginate and with anal angle somewhat sharp : radial strongly curved, without a defined uncus, the postmarginal not quite reaching level of its tip : hyaline streak present : costal cell bearing two rows of strong hairs, which merge to one row in apical fifth.

Head bright green, with brassy reflections on the ridges, merging to coppery from before the median ocellus down to the malar line. Pro- and mesonota bright green, overspread with brassy and, in small patches, bronzy reflection. Pleura and propodeum above blackish brown with weak reflection : propodeum at sides and gaster the same, but with reflections brighter and in part green. Antennae with scape a rich orange-testaceous, slightly darkened along upper and lower margins ; having pedicellus except at apex black, with bright reflection ; having pedicellus at apex and first five funicle segments dull brown, somewhat infuscate above, and sixth funicle segment and club blackish brown with weak reflection. Legs blackish with bright reflections, the femora at apex and tibiae in greater part brown : tarsi testaceous, the mid metatarsi whitish except at apex.

Holotype ♀. U.S.A.: Nebraska, Halsey, 15.vii.1957 (*R. Henzlik*). Holotype in U.S. National Museum.

This is the species most resembling a *Chalcaspis*, on account of the strongly shining, relatively broad frontovertex.

Aenasius pacificus Compere

(Text-figs. 80, 86)

1937 *Aenasius pacificus* Compere, *Proc. Hawaii. ent. Soc.* **9** (3) : 388–91, 399–400.

Head from above moderately broad, median length to breadth = 1 : 1·8 to 2·2 ; frontovertex to total breadth = 1 : 3·4 to 3·9, with ocelli in about a right-angled triangle ; in side view rather short, evenly curved round to mouth : cheeks short, sharply narrowed : facial impression small and shallow, about a third the height of the head, not sharply bordered. Frontovertex with reticulate microsculpture regular and rather fine, with orbital piliferous punctures moderate above, strong below, and at narrowest with four rows of large punctures, which are rather shallow, between them : two rows of large punctures and the orbital punctures descend between eye and facial impression, and reach just below level of bottom of eye (Text-fig. 86).

Mandibles bidentate, the upper tooth longer than the lower.

Antenna with scape (Text-fig. 80) 3 to 3½ times length of its greatest breadth, broadest just before middle ; with pedicellus almost twice length of its greatest breadth ; with funicle segments broad cup-shaped to short-cylindrical, the sixth 2½ times as broad as long : club (see Compere, 1937) equal in length to pedicellus and funicle together.

Reticulate microsculpture on pronotum, mesoscutum and axillae very fine, on scutellum much stronger and more regular : punctures on mesoscutum coarse though shallow, clearly separated by less than their own diameters ; on axillae and scutellum finer and sparser, especially towards apex of scutellum.

Fore wing shape much as in *frontalis* Comp., relatively rather narrow, with lower part of outer margin slightly emarginate and with anal angle somewhat sharp ; subcostal vein markedly expanded before apex, marginal vein relatively short, the postmarginal clearly not reaching tip of uncus, the radial very strongly curved : hyaline streak present : costal cell bearing two rows of strong hairs, the lower fading out in apical quarter.

Head blue-green, with frontovertex largely overspread with purplish bronzy reflections, merging further forward to red-violet on the ridges and more brassy in the punctures and on facial impression : mouth region and sometimes hinder genae rather bronzy. Pronotum, mesoscutum, tegulae, axillae and scutellum with fundamental dull blue-green showing weakly through the bright, rather bronzy, reflection. Pleura, propodeum and gaster brownish black to blackish brown with bright reflections, more strongly blue-green around propodeal spiracles and on parts of gaster. Antennae with pedicellus in upper half and club on outer face blackish brown, with metallic green reflection : scape yellow-testaceous, darkened narrowly at base and half way along upper margin, and more broadly along lower margin to beyond middle : remainder yellow-testaceous, the basal funicle segments sometimes, on outer surface, and the club to some extent, a little darkened. Legs with coxae and trochanters, fore and hind femora in greater and mid femora usually in lesser part, and hind tibiae above, brownish black to blackish brown with weak metallic reflections, otherwise dull testaceous : tarsi dull white, darkened at apex.

Redescribed from two female paratypes. MEXICO.

Aenasius longiscapus Compere

1937 *Aenasius longiscapus* Compere, *Proc. Hawaii. ent. Soc.* **9** (3) : 388–91, 398–9.

Head from above with median length to breadth = 1 : 1·8 ; frontovertex to total breadth = 1 : 3·4 to 3·9, with ocelli in a slightly obtuse triangle ; in side view longer than in *pacificus* Comp., bent round rather sharply from sides of facial impression to mouth region (rather as in *frontalis* Comp., Text-fig. 66, but less strongly) : facial impression rather small, about one-third height of head, strongly narrowed above, bordered by sharp keels at sides up to level of large punctures but not higher. Frontovertex markedly shining, with reticulate microsculpture very fine, with orbital piliferous punctures moderate above, strong below, and at narrowest with four rows of large punctures, which are of normal depth, between them : three rows of large punctures merging to two, and the orbital punctures, descend between eye and facial impression and reach well below bottom of eye.

Mandibles bidentate.

Antenna with scape (see Compere, 1937, p. 389) nearly four times length of its greatest breadth, broadest just beyond basal third ; with pedicellus 1½ times length of its greatest breadth ; with funicle segments cup-shaped to short-cylindrical, the sixth twice as broad as long and as broad as the pedicellus is long : club a little longer than pedicellus and funicle combined.

Microsculpture very fine on pronotum, mesoscutum and axillae, regular and of moderate strength on scutellum (i.e. weaker than in *pacificus* Comp.) : punctures on mesoscutum coarse, separated by less than their own diameters, on scutellum similar, but rather sparser in posterior half.

Fore wings as described for *pacificus* Comp., but the marginal rather longer.

Head blue-green, overspread with pale bronzy in region of ocelli, and red-violet on the ridges further forward : facial impression brassy green, the mouth region more bronzy : genae a duller blue-green, with strong brassy reflection. Pronotum, mesoscutum, tegulae, axillae and scutellum with fundamental blue-green showing weakly through the bright bronzy reflection. Pleura, propodeum and gaster as described for *pacificus* Comp. Antennae with scape for the most part, pedicellus at apex, and funicle yellow-testaceous ; the scape at base and half way along lower margin, pedicellus for the most part, and club blackish brown, with very distinct green reflections. Leg colour of similar pattern to that of *pacificus* Comp. but darker, the brownish black deeper and more shining, and the tarsal colour pale testaceous.

Redescribed from the following. TRINIDAD: Wallerfield, 1 ♀, xi.1958, on *Piper*; I.C.T.A., 1 ♀, iv.1954, *ex Ferrisia* sp. on *Gliricidia* (*F. D. Bennett*).

The unique holotype was deposited in the U.S. National Museum, but a slide mount of the left antenna and pair of wings remained with H. Compere, and this has been available on loan to the present author. In the type, the sixth funicle segment is blackish brown like the club. The slight discrepancy between the proportion of the antennal scape given in the present work and that given by Compere (1937) is due to the angle at which the scape settled in the slide mount. Dr. B. D. Burks kindly compared the specimen taken on *Piper* with the type in Washington, with reference to my manuscripts, and wrote on 26th September, 1962 as follows: " In the type the mesoscutum and mesopleuron are more heavily sculptured than in your specimen, but in the absence of other differences I finally convinced myself that they are the same. Certainly the type runs to *longiscapus* in your key."

This species is very closely related to *pacificus* Comp.

***Aenasius vadosus* sp. n.**

Head from above with median length to breadth = 1 : 2·2 ; frontovertex to total breadth = 1 : 4·8, with ocelli in an acute triangle ; in side view curved more strongly in lower than in upper half, but nowhere sharply bent : cheeks short, sharply narrowed at well over half a right angle, though well rounded : facial impression small, about a third the height of head, bordered by sharp keels at sides up to level of large punctures but not higher. Frontovertex with reticulate microsculpture regular and of moderate strength, with orbital piliferous punctures weak above, moderate below, with large punctures irregular and relatively very shallow and loosely reticulate in region of ocelli : two rows of large punctures and the orbital punctures descend between eye and facial impression, and reach just below bottom of eye.

Mandibles bidentate, the upper tooth slightly the longer.

Antenna with scape just over three times length of its greatest breadth, broadest at basal two-fifths, then almost rectilinearly narrowed ; with pedicellus 1½ times as long as broad ; with funicle segments short, the sixth two and a third times as broad as long : club broad, 1½ times length of combined funicle segments.

Reticulate microsculpture extremely fine on mesoscutum and axillae, very fine on scutellum : punctures very shallow, mostly separated by much more than their own diameters on scutum, still sparser on scutellum.

Fore wings as described for *pacificus* Comp., but quite strongly emarginate above the hyaline streak.

Head with blue-green scarcely discernible beneath the overspread of bright, pale bronzy in region of ocelli, normal bronzy further forward ; brassy green on facial impression and in the punctures above and beside it, the mouth region bronzy : genae blue-green, with brassy to bronzy reflections. Pronotum, mesoscutum, tegulae, axillae and scutellum bright bronzy. Antennae with scape, funicle and club yellow-testaceous, the scape only darkened at extreme base and the club only slightly darkened : pedicellus, except beneath, brownish black with green metallic reflections. Legs with coxae, trochanters, fore femora wholly and hind femora, except at apex, brownish black with metallic reflections : there is similar but paler colour on fore tibiae in about basal two-thirds, on hind tibiae above, and on mid femora and tibiae in about basal three-quarters and at extreme apex, merging to a rich testaceous : mid femora and tibiae before apex and tarsi at base almost whitish, the tarsi otherwise pale testaceous.

Holotype ♀. PORTO RICO, Mayaguez, xi.1959 on coffee (*F. D. Bennett*). Holotype in British Museum (Natural History).

Aenasius acuminatus sp. n.

(Text-fig. 81)

Head from above with median length half breadth : frontovertex a quarter the total breadth, with ocelli in an acute triangle : in side view weakly curved in upper, more strongly in lower half : cheeks much longer than in *vadosus* sp. n., narrowed at well under half a right angle : facial impression rather small, just over one-third the height of head, bordered by sharp keels up to level of large punctures but not higher. Frontovertex with reticulate microsculpture of moderate strength, with orbital piliferous punctures moderate, and at narrowest with four rows of piliferous punctures, which are of normal depth, between them : three rows of large punctures and the orbital punctures descend between eye and facial impression and reach well below bottom of eye.

Mandibles bidentate, the upper tooth slightly the longer.

Antenna with scape (Text-fig. 81) five times length of its greatest breadth, broadest at basal third, then almost rectilinearly narrowed ; with pedicellus 2½ times length of its greatest breadth ; with funicle segments broad cup-shaped to short-cylindrical : club elongate and having the sutures very oblique, over 2½ times as long as broad and over 1½ times length of combined funicle segments.

Reticulate microsculpture on pronotum, mesoscutum and axillae very fine, less fine and more regular towards apex of scutellum ; punctures rather coarse, not exceptionally shallow ; mostly separated by rather more than their own diameters on mesoscutum, if anything a little denser on scutellum except near its apex.

Fore wings as described for *pacificus* Comp., but the marginal rather longer.

Head blue-green, largely overspread above with bronzy, merging to red-violet on the ridges above and beside the facial impression : mouth region and genae with much brassy to bronzy reflection. Pronotum, mesoscutum, tegulae, axillae and scutellum blue-green, almost wholly overspread with bright bronzy. Antennal colouring as described for *longiscapus* Comp., but the club paler. Legs with the same fundamental colour-pattern as in *vadosus* sp. n., but considerably paler.

Holotype ♀. TRINIDAD: Maracas, v.1953, *ex Dysmicoccus brevipes* (Ckll.) on cacao (*F. D. Bennett*). Holotype in British Museum (Natural History).

Aenasius brasiliensis (Mercet)

1926 *Chalcaspis brasiliensis* Mercet, *Eos* **2** : 46–48.
1937 *Aenasius brasiliensis* (Mercet) Compere, *Proc. Hawaii. ent. Soc.* **9** (3) : 288–90, 398.

Head from above moderately broad, median length to breadth = 1 : 2·1 ; frontovertex to total breadth = 1 : 3·3, with ocelli in a slightly obtuse triangle ; in side view short and almost evenly curved : facial impression shallow and not sharply bordered, nearly half height of head. Frontovertex with reticulate microsculpture regular and strong, with orbital piliferous punctures rather strong, and at narrowest with four to five rows of punctures between these.

[Conformation of mandibles not clearly visible on unique type specimen.]

Antenna with scape weakly laminate, almost four times length of its greatest breadth, broadest a little before the middle ; with pedicellus 1½ times length of its greatest breadth ; with funicle segments short-cylindrical, the sixth not twice as broad as long ; with club about equal in length to combined funicle segments.

Mesoscutum finely transversely striate-reticulate, beset with moderate, rather deep, clear-cut punctures that mostly are separated by rather more than their own diameters : scutellum and axillae with reticulate microsculpture shallow but wide, beset with coarse but rather shallow piliferous punctures that mostly are separated by less than their own diameters but are smaller and sparser at sides and on axillae. Propodeum with spiracles large, broad-oval.

Fore wings with lower part of outer margin distinctly a little curved, and with anal angle well rounded : subcostal vein markedly expanded before apex, postmarginal clearly not extending to level of tip of uncus, the radial narrow, very strongly curved : hyaline streak present, though with a row of hairs in it : costal cell broad, bearing two rows and a half row of rather strong, rather sparse, hairs.

Head blue-green, with bronzy coloration in area of ocelli, merging to red-violet and developed mainly on the ridges of the reticulations forward of this and to sides of facial impression. Mesoscutum, axillae, scutellum and tegulae a fundamental dull blue-green, almost entirely overspread with purplish bronzy reflection. Pleura, propodeum and gaster blackish brown to brownish black, with bright reflections, blue-green around propodeal spiracles and in part on gaster above. Antennal scape at base, above and along lower margin, pedicellus except at extreme apex, and club blackish brown with bright reflections, the scape and pedicellus green above : scape in greater part, pedicellus at extreme apex, and funicle yellow-testaceous, the funicle segments a little darkened above. Legs medium brown, with metallic reflections very weak, merging to pale yellow-brown, the tarsi all pale but with apical segment dark, the mid and hind metatarsi whitish in basal half, the mid tibiae dark at apex.

Redescribed from the unique holotype from Corumba, Matto Grosso, Brazil.

Mercet (1926) described the colour of the tegulae as " azules ", and Compere (1937) gave " tegulae blue " as a key character. However the colour may have appeared in the specimen when almost fresh, it does not now appear as more than a dull blue-green. Moreover, Mercet described blue-green coloration as " azul " in other cases.

Aenasius cariocus Compere

(Text-figs. 68, 82)

1921 ? *Blepyrus tachigaliae* Brues, *Zoologica* **3** (9) : 229–30. New York.
1937 *Aenasius cariocus* Compere, *Proc. Hawaii. ent. Soc.* **9** (3) : 388–91, 399.
1937 *Aenasius colombiensis* Compere, *Ibidem*,**9** (3) : 403–4, **syn. n.**
1953 *Aenasius theobromae* Kerrich, *Bull. ent. Res.* **44** (4) : 796–7, **syn. n.**

Head from above variable in breadth, median length to breadth = 1 : 1·7 to 2·3 ; frontovertex to total breadth = 1 : 2·8 to 3·9, with ocelli in a slightly obtuse triangle (Text-fig. 68) ; in side view more strongly curved below than above : facial impression moderately deep, over two-fifths height of head. Frontovertex shining, with reticulate microsculpture very fine to moderate in strength, with orbital piliferous punctures normally moderate, and at narrowest with four, occasionally five, rows of relatively rather shallow punctures between them.

Antenna with scape (Text-fig. 82) moderately laminate, 3 to 3½ times length of its greatest breadth, broadest about in middle ; with pedicellus scarcely a quarter longer than apically broad ; with funicle segments cup-shaped to short-cylindrical, the sixth not quite twice as broad as long ; with club one-fifth to one-half longer than combined funicle segments.

Mandibles bidentate, the upper tooth slightly the longer and larger.

Pronotum, mesoscutum, axillae and scutellum with reticulate microsculpture very fine to rather fine, beset with moderate piliferous punctures that are separated by rather more to rather less than their own diameters. Propodeum with spiracles large, broad-oval.

Fore wings much as described for *brasiliensis* (Mercet), but with hyaline streak usually sharper : costal cell occasionally bearing only two rows of rather strong hairs, which may merge in apical quarter.

Head blue-green, overspread in region of ocelli with bright, pale bronzy merging to red-violet above and beside the facial impression on the ridges, almost blue in the punctures : facial impression blue-green to brassy green, the mouth region more bronzy : genae dull blue-green with weak reflections. Pronotum, mesoscutum, axillae, scutellum and tegulae dull blue-green, which is scarcely discernible beneath the overspread of purplish-bronzy reflection. Pleura, propodeum and gaster brownish black to blackish brown, with bright reflections, blue-green in region of propodeal spiracles and sometimes on gaster above. Antennal scape very broadly above and below blackish with metallic reflections, yellow-testaceous along middle in about apical half, and more or less broadly at apex : pedicellus except at extreme apex and club brownish black, the pedicellus green above : pedicellus at extreme apex and funicle yellow-testaceous, the first four funicle segments somewhat darkened above : the sixth funicle segment sometimes, like the club, brownish black, and rarely the fifth also darkened. Leg colour as described for *brasiliensis* (Mercet), but in one series the mid and hind femora are paler and more extensively so.

Redescribed from the following material. BRAZIL: São Paulo, Garuja, 5 ♀, vii. 1935, " *ex Pseudococcus* sp. 16 " (*E. Hambleton*); São Paulo, 2 ♀, viii.1935, " *ex Pseudococcus* sp. 15 " (*E. Hambleton*); Campinas, 7 ♀, ii.1936, " *ex Pseudococcus* sp. 12 " (*E. Hambleton*). COLOMBIA: Barbosa, 6 ♀, x.1935, *ex Pseudococcus* sp. (*E. G. Salas*) (paratypes of *colombiensis* Comp.); Bucaramanga, 5 ♀, ix.1935, *ex Pseudococcus* sp. (*E. G. Salas*); River Vaupes, 7 ♀, x–xii.1952, " *ex* Coccid D 334 ", 1 ♀, x–xii.1952, " *ex* Coccid D 257 on pineapple " (*D. J. Taylor*). PANAMA: Canal Zone, Paraiso, 2 ♀, 20.i.1911 (*A. Busck*); Montelirio, 1 ♀, 17.iv.1924, unlocalized, 2 ♀, iii.1924 (*D. T. Fullaway*); Barro Colorado, 1 ♀, vi.1941, on *Heliconia marina* (*J. Zetek*). TRINIDAD: Maracas, 3 ♀, x.1949, *ex Dysmicoccus brevipes* (Ckll.) on cacao pod (*T. W. Kirkpatrick*), (holotype and paratypes of *theobromae* Kerrich), 5 ♀, 6.ix.1953, same locality and host data (*F. D. Bennett*). Material in U.S. National Museum, in Citrus Experiment Station, Riverside and in British Museum (Natural History).

Compere (1937) described *colombiensis* as a species differing only in colour from the two series of *cariocus* he then had. From a study of the greater number of series now available, I consider these colour differences not to have significance. In particular I find that some qualities of metallic coloration are revealed by a mixture of moderate artificial light and good daylight, whereas they may be obscured by stronger artificial light which penetrates to the melanin. It is apparent that in some other species with the antennal funicle partly yellow, one more funicle segment than is usual may be dark. Consequently I place *colombiensis* as a straight synonym of *cariocus*. Dr. B. D. Burks, after studying the two types in comparison with specimens from several of the above series and with reference to my manuscripts, has expressed agreement with this synonymy.

In 1953 I described, as a new species *theobromae*, a form that appeared to differ from *cariocus* Comp. in four structural and two colour key characters. It should be noted that the frontovertex was described as having six rows of punctures at narrowest, but that these six include the orbital punctures which are exceptionally large in that series of specimens (Text-fig. 68). This form has the head, seen from above, over half as long as broad, the punctation of the mesoscutum relatively coarse, the frontovertex more obviously green, the antennal scape with relatively little dark marking, the antennal club relatively swollen, and the propodeal spiracles relatively large. Prolonged study, however, of the type series and another series, in conjunction with the numerous series previously placed as *cariocus* Comp., lead me to regard this as a form of *cariocus* exhibiting extremes of variation in several respects. I cannot now maintain it as a distinct species.

This species is so variable that it seems possible that *brasiliensis* (Mercet) is another aberrant form of it.

H. Compere has recognized *Blepyrus tachigaliae* Brues as belonging to the genus *Aenasius*, and specimens that I place as *cariocus* have been determined as *tachigaliae* by D. T. Fullaway, A. B. Gahan and B. D. Burks. I would think it premature, however, to accept this as definite synonymy before the type has been re-examined. The type is not in the U.S. National Museum, and cannot be traced in the American Museum of Natural History, the collection of the New York Zoological Society, or the Museum of Comparative Zoology, Harvard.

Aenasius brethesi De Santis

(Text-figs. 87–88)

1964 [1963] *Aenasius brethesi* De Santis, *An. Comn Invest. cient. Prov. Bs Aires* **4** : 255, 257–60.

Head from above broad, median length to breadth = 1 : 2·2 ; frontovertex to total breadth = 1 : 3·9, with ocelli in a right-angled triangle ; in side view almost regularly rounded : cheeks of moderate length and well rounded : facial impression over a third the height of head. Frontovertex with reticulate microsculpture fine, with orbital piliferous punctures small, and at narrowest with four rows of large punctures between them : facial impression broad and nowhere sharply bordered, about two-fifths height of head, the large punctures descending only a short way below its upper margin (Text-fig. 87).

Mandibles (De Santis, fig. 124) bidentate.

Antenna (according to measurements cited and fig. 122) with scape 3·9 times length of its greatest breadth, broadest well beyond middle ; with pedicellus twice length of its greatest breadth ; with funicle segments short cup-shaped, the sixth twice as broad as long : [club incomplete].

Reticulate microsculpture on mesoscutum and axillae rather fine, on scutellum of moderate strength : these sclerites beset with moderate piliferous punctures that mostly are separated by rather more than their own diameters.

Fore wing with lower part of outer margin strongly curved and with anal angle regularly rounded : radial straight in basal two-thirds, then curved, and sharply pointed at apex, the postmarginal clearly extending beyond its tip (Text-fig. 88) : hyaline streak absent : costal cell bearing three rows of strong hairs, merging to two in about apical third.

Head dull blue-green with occasional patches of bronzy reflection, on facial impression merging to more strongly bronzy below. Pronotum, mesoscutum, axillae and scutellum dull blue-green, with bronzy reflection especially at sides. Pleura and propodeum blackish brown, and gaster brownish black, with weak reflections. Legs brownish black, with bright reflections, merging to dull testaceous.

Holotype ♀. ARGENTINA: Buenos Aires, Delta del Parana, 25.i.1908 (*J. Brèthes*).

I wish to express my gratitude to Dr. Manuel J. Viana for according me the loan of this type from the collection of the Museo Argentino de Ciencias Naturales " Bernadino Rivadavia ", Buenos Aires. This has enabled me to make direct comparison between the species and its closer relatives. I have not, however, seen the antennae, mandibles and right wings, which had been dissected off for illustration.

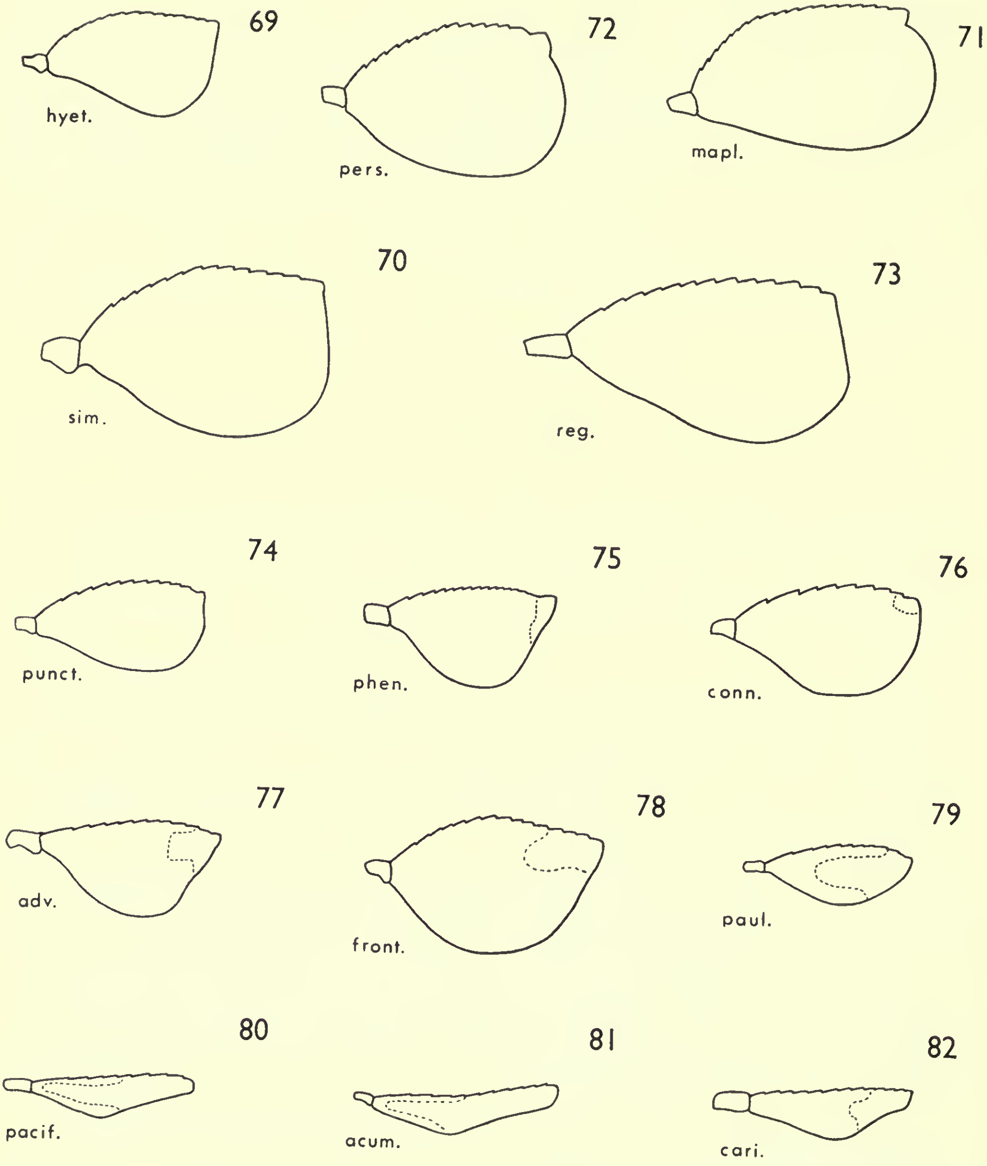
Aenasius bolowi Mercet

1928 *Aenasius* sp. Mercet, *Eos* **4** : 11–12.
1947 *Aenasius bolowi* Mercet, *Revta R. Acad. Cienc. exact. fis. nat. Madr.* **41** : 466–7, **species dubium.**

This species was validated in a paper consisting of manuscript descriptions pieced together and published 14 years after their distinguished author's death. The description of *Aenasius bolowi* was evidently based on a specimen that Mercet had for study, and referred to but did not validate in a paper published in 1928. Unluckily this specimen cannot be traced in the Madrid museum at this time, nor is it in the Zoologisches Museum der Universität, Berlin or the Deutsches Entomologisches Institut. The description does not appear to fit any species of *Aenasius* treated in the present paper, and it is possible that *Aen. bolowi* belongs to some other, similar genus.

Key to Species of *AENASIUS* Walker : females

1 Antennal scape expanded into a broad lamina, only about one and one-third times to about twice length of its greatest breadth (Text-figs. 69–78): mandibles bidentate . . . 2
Antennal scape less strongly laminate, at least 2½ times length of its greatest breadth (Text-figs. 79–82): mandibles bidentate, in two species obscurely tridentate . . . 16
2 Antennal funicle blackish brown to brownish black, with weak metallic reflections, the first 4 or 5 segments very broad, rather saucer-shaped 2
Antennal funicle with at least two segments pale yellow-testaceous, the segments usually short-cylindrical, none more than about 3 times as broad as long [in one species in which the first three are saucer-shaped the wing margin is sharply incised at apex of the sub-parallel costal cell] 13
3 Fore wing with a hyaline streak running from tip of radial to tip of postmarginal (Compere, 1937, fig. 3, *longiscapus* and others), with lower part of outer margin less strongly curved and with anal angle less rounded: facial impression bordered by a distinct keel at least at sides 4
Fore wing without such streak (Compere, 1937, fig. 3, *punctatus* and others), with outer margin distinctly to strongly curved and with anal angle well rounded: facial impression not bordered by a distinct keel at sides and seldom above . . 9
4 Facial impression also bordered by a distinct keel above (almost as distinct as in *frontalis* Comp.), the face distinctly angled in this position: punctation of frontovertex relatively shallow: lamina of antennal scape not bulging outward at apex (Text-figs. 69 and 70): fore wing with outer margin distinctly a little curved and with anal angle moderately rounded 5
Facial impression bordered by distinct keels at sides but not above: punctation of frontovertex deep: lamina of antennal scape bulging outward at apex (Text-figs. 71–73): fore wings with lower part of outer margin almost straight and with anal angle relatively sharp 6
5 Antennal scape three-quarters longer than its greatest breadth, the lamina curving inward from apex (Text-fig. 69): antennal club longer than the combined funicle segments . . . . ***hyettus*** Walker
Antennal scape one-half longer than its greatest breadth, the lamina falling almost vertically at apex (Text-fig. 70): antennal club shorter than the combined funicle segments . . . . ***similis*** sp. n.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FIGS. 69–82. *Aenasius* species, females. Left antennal scape, in dextro-lateral view, of 69, *Aen. hyettus* Walk.; 70, *Aen. similis* sp. n.; 71, *Aen. maplei* Comp.; 72, *Aen. personatus* sp. n.; 73, *Aen. regularis* sp. n.; 74, *Aen. punctatus* Comp.; 75, *Aen. phenacocci* Bennett; 76, *Aen. connectens* sp. n.; 77, *Aen. advena* Comp.; 78, *Aen. frontalis* Comp.; 79, *Aen. paulistus* Comp.; 80, *Aen. pacificus* Comp.; 81, *Aen. acuminatus* sp. n. and 82, *Aen. cariocus* Comp.

6 Frontovertex relatively broad, nearly a third the total head width, with ocelli in a slightly obtuse triangle (95°) (Text-fig. 55), antennal scape not or but little broader than the frontovertex: frons rather prominent, the facial impression rather deep as seen from above, the head in side view bent round rather sharply to mouth region (Text-fig. 62) . . . . ***maplei*** Compere

Frontovertex less than a quarter total head width, with ocelli in a decidedly acute triangle (65–70°) (Text-figs. 56–57), antennal scape much broader than the frontovertex: frons less prominent, the facial impression appearing less deep from above, the head in side view more evenly curved, less sharply bent round to mouth region 7

7 Antennal scape (Text-fig. 72) very broad, about one-third longer (dorsally) than its greatest breadth: head from above moderately broad (Text-fig. 56) . ***personatus*** sp. n.

Antennal scape (Text-fig. 73) about three-fifths longer (dorsally) than its greatest breadth: head from above mostly broader (Text-fig. 57) 8

8 Mesoscutum beset with shallow but well-defined piliferous punctures that mostly are separated by less than their own diameters: fore wing with radial vein only slightly curved: head and thorax usually with much red-violet . . ***caeruleus*** Brues

Antennal club nearly twice as long as combined funicle segments: mesoscutum beset with rather small and ill-defined piliferous punctures that are separated by much more than their own diameters: fore wing with radial vein distinctly curved: head and thorax with little red-violet . . . . ***regularis*** sp. n.

9 Head, pro- and mesothorax, and to a lesser extent metathorax, propodeum and sides of gaster with reticulate microsculpture very strong and regular, giving the species a velvety appearance: antennae with scape twice as long (dorsally) as its greatest breadth, the lamina bulging very slightly outward at apex (Text-fig. 74): wings with prebasal area regularly beset with hairs which are not so much larger than those on postbasal, and do not tend so much to be in distinct rows as in other species ***punctatus*** Compere

Not as above: antennal scape about one-half longer than its greatest breadth, with lamina, except in the next species, curving inward from apex . . . 10

10 Facial impression bordered by a sharp keel above but not at sides: head in side view rather long and strongly curved (Text-fig. 63): lamina of antennal scape bulging outward slightly at apex: postmarginal extending beyond tip of uncus: costal cell bearing two rows of strong hairs . . . . ***vexans*** sp. n.

Facial impression not bordered by a distinct keel above or at sides: head in side view shorter: lamina of antennal scape curving inward from apex (Text-fig. 75): postmarginal not reaching level of tip of uncus; costal cell bearing three or four rows of strong hairs 11

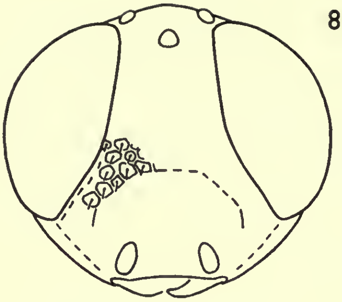
11 Head from above moderately long, median length to breadth = 1:1·7 to 2·0: reticulation on frontovertex, mesoscutum and scutellum very fine: propodeal spiracles broad-oval to sub-circular and large: mid tibiae pale testaceous-brown ***phenacocci*** Bennett

Head from above decidedly broad, median length to breadth = 1:2·0 to 2·4: reticulation on mesoscutum and scutellum of at least moderate strength: propodeal spiracles transverse-oval, not abnormally large: mid tibiae usually blackish brown to brownish black, sometimes paler 12

12 Punctation of frontovertex (as in *phenacocci*) relatively shallow and rather regular: greatest width of scape about equal to narrowest width of frontovertex: antennal club only slightly longer than combined funicle segments: head with little red-violet . . . . ***flandersi*** sp. n.

Punctation of frontovertex deeper and less regular: greatest width of scape about 1½ times narrowest width of frontovertex: antennal club about one-half longer than combined funicle segments: head with much red-violet . ***masii*** Domenichini

13 Costal cell sub-parallel almost to apex, where the wing margin is sharply incised: antennal scape with lamina falling almost vertically from apex (Text-fig. 76):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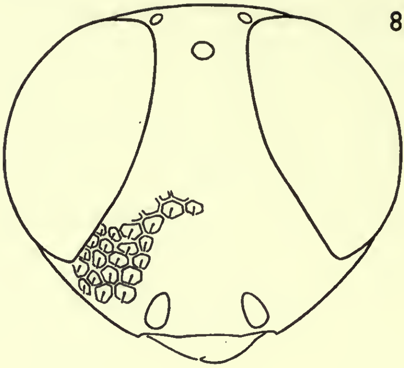
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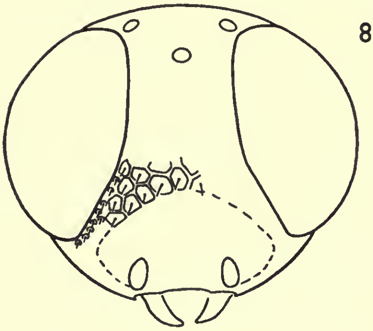
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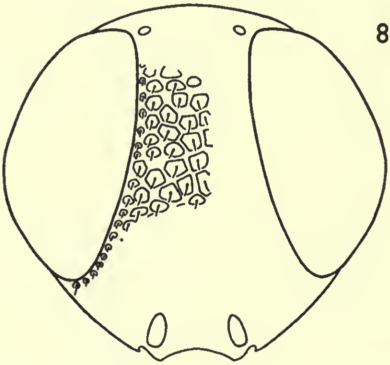
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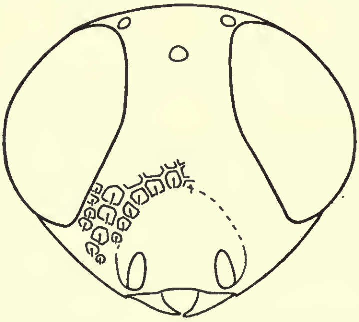
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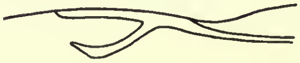
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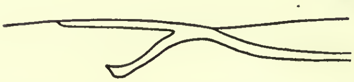
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FIGS. 83–87. *Aenasius* species, females. Head, in facial view, of 83, *Aen. connectens* sp. n.; 84, *Aen. advena* Comp.; 85, *Aen. paulistus* Comp.; 86, *Aen. pacificus* Comp. and 87, *Aen. brethesi* De S.

FIGS. 88–89. Part of left fore-wing of 88, *Aenasius brethesi* De S. and 89, *Blepyrus clavicornis* (Comp.).

head in side view (Text-fig. 64) neither so evenly curved as in *advena* Comp. nor so sharply bent round as in *frontalis* Comp. (Text-figs. 65 and 66): facial impression decidedly broad (Text-fig. 83), bordered by a distinct keel above but not at sides: one to two rows of large punctures descend between the eye and facial impression, and do not nearly reach the malar line: postmarginal vein clearly extending beyond tip of uncus: [hyaline streak absent] . . . . **connectens** sp. n.

Costal cell distinctly tapered to apex, where the wing margin is not sharply incised: antennal scape with lamina curving well inward from apex: head in side view (see Text-figs. 65 and 66 and following couplet): facial impression less broad, either not bordered by a distinct keel or bordered by a sharp keel above and at sides: two to three rows of large punctures descend between eye and facial impression, and nearly reach the malar line: postmarginal vein not reaching tip of uncus 14

14 Head from above decidedly broad, about twice or more as broad as long, with frontal emargination shallow; in side view rather evenly curved to mouth (Text-fig. 65): frontovertex hardly shining, about one-fifth the total head width: facial impression narrow above (Text-fig. 84), not bordered by a distinct keel: fore wings with lower part of outer margin moderately curved: hyaline streak absent . . **advena** Compere

a. Head blue-green, in large part with brassy reflections, around median ocellus more coppery and golden: antennae with club and last two funicle segments blackish brown . . . . type form

b. Head dominantly red-violet above, blue-green near the median ocellus (but intermediates are now known) . . . . . . var. **ianthinus** Compere

c. Small specimens: antennae with scape twice or just over twice as long as its greatest breadth and with whole funicle a rich yellow-testaceous: U.S.A., Florida . var.

Head from above elongate, much less than twice as broad as long, with frontal emargination deep (Text-fig. 67); in side view (Text-fig. 66) seen to be falling forward and then bent round at about a right angle to mouth region: frontovertex strongly shining, about a quarter the total head width: facial impression less narrow above, bordered by a sharp keel above and at sides: fore wings with lower part of outer margin slightly emarginate: hyaline streak present . . . 15

15 Frontovertex between a fifth and a quarter the total head breadth: mesoscutum with relatively fine, transversely lineolate microsculpture: legs, except coxae and trochanters, mainly testaceous . . . . **frontalis** Compere

Frontovertex one-third the total head breadth: mesoscutum shagreened between the punctures: legs blackish, with only the tarsi paler . . **chapadae** Ashmead

16 Antennal scape two and a half to less than three times as long as broad, and shaped as in Text-fig. 79: fore wing rather sharply incised at apex of costal cell, without a definite hyaline streak, and with postmarginal extending beyond tip of radius: facial impression broad, the large punctures not descending far below its upper margin (Text-fig. 85): mandibles obscurely tridentate 17

Antennal scape at least about three times as long as broad and shaped differently (Text-figs. 80–82): fore wing not sharply incised at apex of radial cell: except in *brethesi* De S., fore wing with a hyaline streak and with postmarginal not extending as far as tip of radius, and facial impression less broad, the large punctures descending much further: mandibles bidentate 18

17 Cheeks and large punctures as in Text-fig. 85: large punctures on frontovertex of fully normal depth: piliferous punctures on mesoscutum regular and relatively deep, mostly separated by about or rather less than their own diameters, on scutellum not inconspicuous; propodeum with spiracles large, very broad-oval: fore wing with infuscation fading out towards outer margin: antennal club blackish brown with green metallic reflections: tarsi pale testaceous, darkened at apex: Brazil . . . . **paulistus** Compere

Cheeks more rounded, and large punctures descending even less far below upper margin of facial impression: large punctures on frontovertex relatively shallow; piliferous punctures on mesoscutum rather shallower and mostly separated by more than their own diameters, on scutellum rather inconspicuous: propodeum with spiracles transverse-oval, not abnormally large: fore wing with infuscation curving outward from apex of radial vein, leaving the wing very broadly hyaline by outer margin: antennal club largely dull yellow-testaceous, blackish brown near base: tarsi rather darker: islands of Mexico . . . . . . ***insularis*** Compere

18 Fore wing shape much as in *frontalis* Comp., relatively rather narrow, with lower part of outer margin slightly emarginate and with anal angle relatively sharp: cheeks usually short, sharply narrowed, and facial impression relatively small, not more than about a third the height of head (Text-fig. 86) 19

Fore wings broader, with lower part of outer margin curved gently outward, and with anal angle more rounded: cheeks longer and less narrowed, and facial impression relatively large, about two-fifths or more the height of head . . 23

19 Frontovertex at narrowest well over a quarter the total head breadth: ocelli in about a right angled or slightly obtuse triangle: punctures on mesoscutum separated by less than their own diameters 20

Frontovertex at narrowest a quarter or less the total head breadth: ocelli in a decidedly acute triangle: punctures on mesoscutum mostly separated by rather more than their own diameters 22

20 Head, seen from above, with orbital piliferous punctures strong, and with larger punctures in a loose reticulation: inter-scrobal prominence visible when the head is viewed from above; mesoscutum conspicuously bright green, markedly shining (though less strongly so than the frontovertex), and with punctation notably sharp: U.S.A. . . . . ***nitens*** sp. n.

Head, seen from above, with orbital piliferous punctures not strong, and with larger punctures in a close reticulation: inter-scrobal prominence not visible when the head is viewed from above: mesoscutum dull blue-green showing weakly through the rather bronzy reflection, not markedly shining, the microsculpture stronger, and with punctation not notably sharp 21

21 Frontovertex not especially shining, the dull blue-green coloration largely overspread, with punctures rather shallow: head in side view rather short, evenly curved round to mouth: antennal scape 3 to $3\frac{1}{2}$ times length of its greatest breadth, broadest just before middle (Text-fig. 80): antennal club equal in length to pedicellus and funicle combined . . . . ***pacificus*** Compere

Frontovertex decidedly shining and more conspicuously green, with punctures of normal depth: head in side view rather longer, bent round rather sharply from sides of facial impression: antennal scape nearly 4 times length of its greatest breadth, broadest just beyond basal third: antennal club longer than pedicellus and funicle combined . . . . ***longiscapus*** Compere

22 Frontovertex with punctures relatively very shallow: cheeks very short, narrowed at well over half a right angle: two rows of large punctures and the orbitals descend between eye and facial impression, and reach just below bottom of eye: antenna with scape just over 3 times, and club about $1\frac{1}{2}$ times, length of its greatest breadth: punctures on mesoscutum and scutellum very shallow, mostly separated by much more than their own diameters . . . . . . ***vadosus*** sp. n.

Frontovertex with punctures of normal depth: cheeks longer, narrowed at less than half a right angle: three rows of large punctures and the orbitals descend between eye and facial impression, and reach well below bottom of eye: antenna with scape (Text-fig. 81) 5 times, and club $2\frac{1}{2}$ times, length of its greatest breadth: punctures on mesoscutum and scutellum not exceptionally shallow, mostly separated by little more than their own diameters except near apex of scutellum ***acuminatus*** sp. n.

23 Facial impression broad, the large punctures descending only a little way below its upper margin (Text-fig. 87): sixth funicle segment 2½ times as broad as long: fore wing with hyaline streak absent, with radius emitted at a relatively acute angle and straight in basal two-thirds, the postmarginal clearly extending beyond tip of uncus (Text-fig. 88): frontovertex and mesonotum very conspicuously dull blue-green: Argentina . . . . ***brethesi*** De Santis

Facial impression less broad, the large punctures descending to about bottom of eye: sixth funicle segment not quite twice as broad as long: fore wing with hyaline streak present, with radius emitted at well over 45° and strongly curved, the postmarginal clearly not reaching level of tip of uncus: frontovertex and mesonotum with blue-green coloration mainly overspread 24

24 Antennal scape almost 4 times length of its greatest breadth, broadest just before middle: facial impression relatively shallow, almost half height of head: mesoscutum with moderate, rather deep, clear-cut punctures that are smaller than the coarse but shallower punctures on the middle of the scutellum (but this character is not especially obvious) . . . . ***brasiliensis*** (Mercet)

Antennal scape (Text-fig. 82) not more than about 3½ times length of its greatest breadth: facial impression of normal depth and somewhat smaller: punctures on scutellum not coarser than those on mesoscutum . . . ***cariocus*** Compere

BLEPYRUS Howard, 1898

1898 *Blepyrus* Howard, *Proc. U.S. natn. Mus.* **21** : 233–4.
1922 *Blepyrus* Howard ; Timberlake, *Proc. Hawaii. ent. Soc.* **5** : 168–70.

Blepyrus clavicornis (Compere) **comb. n.**

(Text-figs. 89, 90, 92)

1939 *Ericydnus clavicornis* Compere, *Univ. Calif. Publs Ent.* **7** (4) : 62–3.

Head from above with median length to breadth = 1 : 2·1 ; frontovertex to total breadth = 1 : 4·6 to 4·9, with ocelli in an acute triangle ; in side view curved rather evenly to mouth : cheeks rather long, strongly curved (Text-fig. 90) : facial impression shallow and not sharply bordered, nearly half height of head. Frontovertex with reticulate microsculpture regular and of moderate strength, with orbital piliferous punctures small, and at narrowest with four rows of large punctures between them : large punctures descending between eye and facial impression rather scattered below. Piliferous punctures in malar area moderate.

Mandibles bidentate, the upper tooth somewhat the larger and longer.

Antenna (see Compere, 1939, fig. 3) with scape hardly expanded beneath, seven times length of its greatest breadth ; with pedicellus twice length of its greatest breadth ; with funicle segments cup-shaped to short cylindrical, the sixth 1·4 times as broad as long : club a little longer than combined funicle segments and with sutures very oblique.

Mesoscutum with reticulate microsculpture rather strong, beset with shallow piliferous punctures that mostly are separated by less than their own diameters. Axillae and scutellum with microsculpture finer and much more outstanding, giving these sclerites a duller appearance : piliferous punctures fine : scutellum quite sharply pointed at apex (Text-fig. 92).

Fore wings relatively elongate, with outer margin and anal angle well rounded : marginal vein about half length of radial, the latter emitted at an angle of about 45° (Text-fig. 89) : costal cell bearing four rows of hairs on upper surface.

Head blue-green to blue, on frontovertex with much red-violet, and below that with slight infusion of red-violet to bronzy. Mesoscutum, except peripherally, strongly red-violet with some infusion of blue at sides : otherwise the dorsum of thorax is a fundamental blue-green to blue, mainly overspread with dull red-violet to bronzy reflections. Mesopleura, propodeum above and gaster blackish with weak reflections, but sides of propodeum conspicuously blue-green. Antennal scape yellow: pedicellus and flagellum brownish black, with weak green reflections. Legs blackish at base to brownish, with weak reflections, the hind tibiae paler in apical third: fore and mid tibiae in apical two-thirds, and all tarsi yellow.

Redescribed from two paratypes. BRAZIL.

Blepyrus insularis (Cameron)

(Text-figs. 91, 93)

1886 *Encyrtus? insularis* Cameron, *Mem. Proc. Manchr lit. phil. Soc.* (3) **10**: 243–5.
1922 *Blepyrus insularis* (Cameron); Timberlake, *Proc. Hawaii. ent. Soc.* **5**: 167–73.
1945 *Clausenia saissetiae* Yasumatsu & Yoshimura, *Mushi* **16**: 31–2, **syn. n.**

Head from above with median length to breadth 1 : 1·9 to 2·3; frontovertex to total breadth = 1 : 3·6 to 4·8, with ocelli in an acute triangle; in side view curved very evenly: cheeks short and sharply narrowed though strongly curved (Text-fig. 91): facial impression shallow and not sharply margined, nearly half height of head. Frontovertex with reticulate microsculpture regular and of moderate strength, with orbital piliferous punctures small but regular, and at narrowest with five rows of large punctures, which are rather shallow, between them: one row of large punctures, diminishing in size from above, descends obscurely between eye and facial impression. Piliferous punctures in malar area rather fine.

Mandibles tridentate, all teeth sharp, the middle one much the longest.

Antenna (see Timberlake, 1922, fig. 1) with scape very little expanded beneath, five to six times length of its greatest breadth; with pedicellus twice length of its greatest breadth; with funicle segments saucer-shaped, and club more than one-half longer than the combined funicle segments.

Dorsum of thorax with reticulate microsculpture fine, that on axillae and scutellum little more outstanding than that on mesoscutum. Piliferous punctures on mesoscutum and axillae of moderate depth, mostly separated by less than their own diameters, those on scutellum finer, mostly separated by more than their own diameters: scutellum less pointed than in *clavicornis* (Comp.) and axillae more widely separated (Text-fig. 93).

Fore wings as described for *clavicornis* Comp., but radial emitted at a slightly acuter angle: costal cell bearing three rows of hairs on upper surface, rather broadly glabrous next the submarginal vein.

Head a fundamental dull blue-green overspread, usually in greater part, with dull red-violet and bronzy. Dorsum of thorax a fundamental blue-green showing weakly through the reflection, which normally is very conspicuously red-violet on mesoscutum, pale bronzy on scutellum. Mesopleura, propodeum, and gaster in greater part, blackish with bright reflection, the gaster conspicuously blue-green near base above. Antennal scape yellow to yellow-testaceous; pedicellus and flagellum dull testaceous below, and pale brown with weak greenish reflections above. Coxae, trochanters, fore femora wholly, and mid and hind femora in about basal half, blackish with weak reflections: legs otherwise yellow-testaceous except that the mid femora are dull brown in apical half and the mid tibiae strongly infuscate in basal half.

Redescribed from the following. HAWAIIAN IS.: Honolulu, 6 ♀, 2–5.iv.1916, *ex Ferrisia virgata* (Ckll.) (*P. H. Timberlake*). MARIANNA IS.: Saipan, 1 ♀, 12.v.1940, on *Terminalia* sp. supposedly *ex Saissetia* sp. (*K. Yasumatsu* & *S. Yoshimura*), (type of *saissetiae* Yasu. & Yoshi.). PAPUA: Milne Bay, 3 ♀, 12.x.1958, *ex ?Planococcus citri* (Risso) on coffee (*W. C. Dormer*). SARAWAK: 10 ♀, ex mealybug (*C. R. Wallace*). MALAYA: Selangor, 1 ♀, viii.1948 (no further data), 1 ♀, vi.1951, "*ex* ovisac of *Pulvinaria maxima*", 1 ♀, ii.1952, *ex F. virgata* (Ckll.), per *Rubber Research Institute*; Selangor, Kuala Lumpur, 4 ♀, 24.iv.1956, per *Department of*

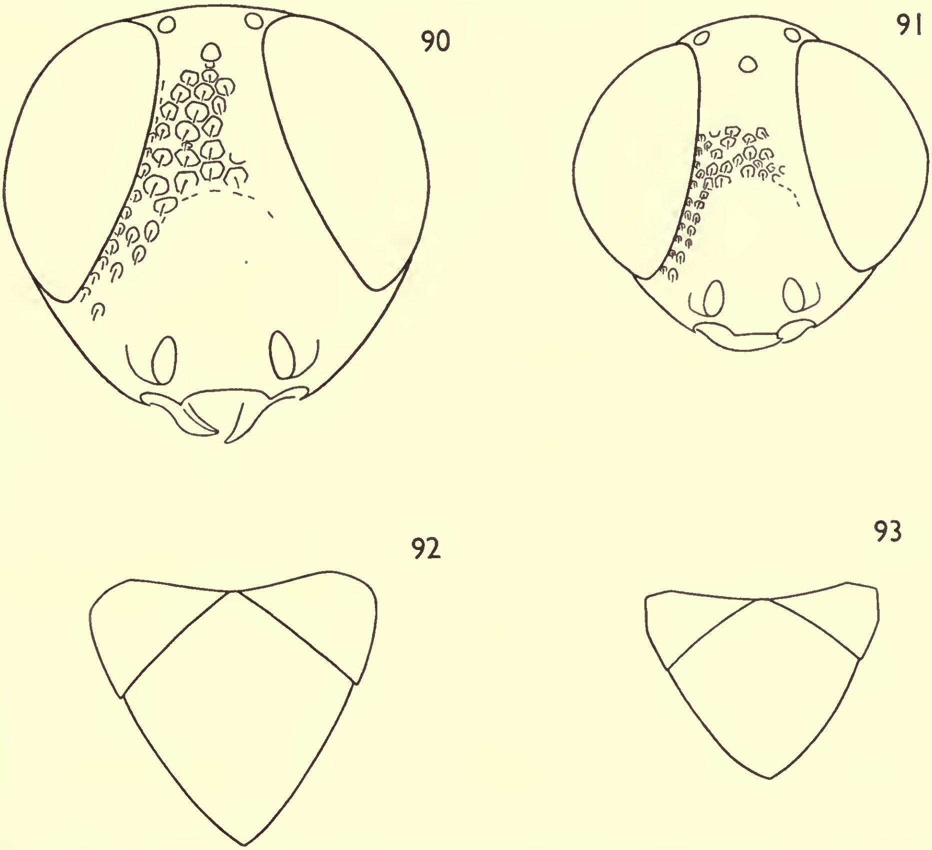
Agriculture. CEYLON: Peradeniya, 3 ♀, 20.v.1954, *ex F. virgata* (Ckll.) per *Department of Agriculture.* INDIA: Madras, 1 ♀, 4.ii.1958, ex mealybug on guava, per *V. P. Rao.* NIGERIA: Ibadan, 3 ♀, viii.1954, *ex F. virgata* (Ckll.) on *Theobroma cacao*, 3 ♀, viii.1954 on *Gliricidia* sp. (*R. G. Donald*). Much of this material in British Museum (Natural History).

The mount which bore the Cameron type specimen is in the British Museum (Natural History), but the type specimen, which was examined by J. Waterston, is now missing.

This species is evidently a tropicopolitan parasite of *Ferrisia virgata* (Ckll.).

KEY TO THE SPECIES OF *BLEPYRUS* Howard : FEMALES

A. Cheeks rather long (Text-fig. 90): antennal scape seven times length of its greatest breadth: funicle segments cup-shaped to short-cylindrical: mandibles bidentate: scutellum more pointed than in alternate (Text-fig. 92), and much less shining than mesoscutum: costal cell bearing four rows of hairs on upper surface: flagellum brownish black: hind tibiae considerably darkened . . ***clavicornis*** (Compere)



FIGS. 90–93. *Blepyrus* species, females. 90–91. Head, in facial view, of 90, *B. clavicornis* (Comp.) and 91, *B. insularis* (Cam.). 92–93. Scutellum and axillae of 92, *B. clavicornis* (Comp.) and 93, *B. insularis* (Cam.).

B. Cheeks much shorter (Text-fig. 91): antennal scape five to six times length of its greatest breadth: funicle segments saucer-shaped: mandibles tridentate: scutellum less pointed than in alternate (Text-fig. 93), and little less shining than mesoscutum: costal cell bearing three rows of hairs on upper surface: flagellum pale brown: hind tibiae yellow-testaceous . . . . . ***insularis*** (Cameron)

Species incorrectly placed in *Blepyrus* Howard

Blepyrus tachigaliae Brues, 1921 is discussed in the present work (pp. 216–8).
Blepyrus saccharicola Gahan, 1942 is treated in the present work (p. 237).

NEODISCODES Compere, 1931

1931 *Neodiscodes* Compere, *Univ. Calif. Publs Ent.* **5** (14) : 272–4.
1939 *Neodiscodes* Compere; Compere, *Bull. ent. Res.* **30** (1) : 24.
1953 *Neodiscodes* Compere ; Kerrich, *Bull. ent. Res.* **44** (4) : 793 *ex parte*.

In this study of the genus, seven species are recognized; but they are closely related, and only two are represented by long series, so that the range of variation in other cases has yet to be determined.

Compere (1939) examined two specimens in a rearing from *Pseudococcus* sp. on Kei Apple in Kenya, but did not consider them distinct from the type species. One of these specimens was deposited in the British Museum collection and Kerrich (1953) did consider it specifically distinct but did not validate it. A further reared series agreeing closely with this specimen having been received, the species is now validated; yet two other specimens show variation in either direction from the form considered as typical.

Neodiscodes parvus **sp. n.**

Head, seen from above, relatively strongly emarginate behind : median length to breadth about 1 : 1·8 ; frontovertex to total breadth = 1 : 4·5, with median ocellus one and a half times its own diameter from orbital margin : in side view relatively long, relatively much longer than in *lepelleyi* Kerrich (cf. Text-fig. 96) ; in facial view with cheeks well rounded. Frontovertex with reticulate microsculpture of moderate strength ; with orbital piliferous punctures small ; with larger punctures between ocelli of moderate strength, rather shallow, but mostly not well separated, those before median ocellus much coarser and deeper, and in a reticulation. Eyes very distinctly and not sparsely hairy (× 45).

Antennal scape 2·5 times length of its greatest breadth.

Mesoscutum with reticulate microsculpture very fine, a little coarser and more outstanding at sides, beset with fine, rather sparse, piliferous punctures : axillae and scutellum very similar, but the punctation still sparser. Scutellum narrowly rounded at apex.

Fore wing twice length of its greatest breadth, with outer margin moderately curved and with anal angle well rounded : radius emitted at an angle of about 45°, decidedly expanded from base and moderately curved, with a long uncus that does not extend nearly as far as apex of postmarginal.

Head deep blue-green, with dull bronzy reflections strong on frontovertex, weak on facial area. Thorax above a fundamental dull blue-green, overspread with weak bronzy reflection. Pleura, propodeum and gaster blackish brown, with weak bronzy reflection and some blue-green on first large tergite. Antennae blackish brown, with metallic reflections weak to moderate : pedicellus narrowly paler at apex. Legs brownish black, the mid and hind femora and tibiae very largely a rather pale brown : tarsi stramineous, pale brown at segmental apices.

Holotype ♀. CHINA: Hunan, 11.vii.1949, " ex A524 ", Djou coll.

Paratype. 1 ♀ "shipment no. A211 ".

Holotype in British Museum (Natural History): paratype in Citrus Experiment Station, Riverside. Two males have similar data to the holotype, and one is to be deposited in each institution.

Neodiscodes comperei sp. n.

(Text-fig. 94)

1953 *Neodiscodes* sp. Kerrich, *Bull. ent. Res.* **44** : 795–6.

Head, seen from above (Text-fig. 94), relatively long, with median length to breadth = 1 : 1·5 to 1·9 ; frontovertex to total breadth = 1 : 5·5, with median ocellus one and a half times its own diameter from orbital margin : in side view relatively long, sharply curved ; in facial view with cheeks weakly rounded. Frontovertex with reticulate microsculpture of moderate strength ; with orbital piliferous punctures very small but not minute ; having larger punctures between ocelli of moderate strength with some wide interspaces, those just before median ocellus scarcely larger and denser, but increasing in size and density forwards so as normally to form a reticulation above the facial area (Text-fig. 94). Eyes weakly and rather sparsely hairy (× 45).

Antennal scape 2·6 times length of its greatest breadth.

Mesoscutum with reticulate microsculpture fine in middle and not much more outstanding at sides, beset with piliferous punctures that mostly are separated by less than their own diameters in middle, and are not much smaller and sparser at sides. Axillae and greater part of scutellum with microsculpture a little less fine than on middle of mesoscutum, and with piliferous punctures markedly sparser, mostly separated by much more than their own diameters. Scutellum moderately pointed at apex.

Fore wing two and a quarter times length of its greatest breadth, with outer margin almost straight but with anal angle well rounded : radius emitted at a moderately acute angle, moderately to quite strongly curved, with a long, sharp uncus that extends just beyond apex of postmarginal.

Head a fundamental blue-green, mainly overspread with dull bronzy reflection. Thorax above dull blue-green to steely green. Pleura, propodeum and gaster brownish black, with weak bronzy reflection. Antennae blackish to paler, with weak metallic reflections, the pedicellus paler at apex. Leg colour much as described for *lepelleyi* Kerrich.

Holotype ♀. SOUTH AFRICA, Cape Province, Addo, ii.1963, *ex Allococcus quaesitus* (Brain) on citrus (*W. Hannekom*).

Paratypes. KENYA: Nairobi, National Agricultural Laboratory, 1 ♀, 6.iii.1937, *ex Pseudococcus* sp. on Kei Apple (*Albizzia* sp.) (*A. R. Melville*) (see Kerrich, 1953). SOUTH AFRICA: 2 ♀ (same data as holotype).

Holotype, and paratype from Kenya, in British Museum (Natural History); paratypes in collection of Department of Agriculture, Pretoria and in United States National Museum.

This species, received in series from Dr. D. P. Annecke and described by the present author, is named in gratitude for the inspiration given to both of us by Dr. H. Compere.

Neodiscodes lepelleyi Kerrich

(Text-fig. 96)

1953 *Neodiscodes lepelleyi* Kerrich, *Bull. ent. Res.* **44** : 794–6.

Head, seen from above, about twice as broad as median length : frontovertex to total breadth about 1 : 8·5, with median ocellus half its own diameter from orbital margin : in side view (Text-fig. 96) relatively short ; in facial view with cheeks moderately rounded. Frontovertex with reticulate microsculpture moderate to rather strong ; with orbital piliferous punctures minute ; having larger punctures between ocelli of moderate strength, mostly with wide interspaces, those before median ocellus larger, becoming coarser and closer just above facial area but mostly well separated. Eyes weakly and rather sparsely hairy (× 45).

Antennal scape 2·6 times length of its greatest breadth.

Mesoscutum with reticulate microsculpture very fine except at sides, where it is a little coarser and considerably more outstanding, beset with piliferous punctures that in middle are mostly separated by a little more than their own diameters, but at sides are much finer and sparser. Axillae similar to middle of mesoscutum. Scutellum duller, the microsculpture less fine : piliferous punctures markedly sparser. Scutellum very bluntly pointed, almost rounded, at apex.

Fore wing twice length of its greatest breadth, with outer margin moderately curved and with anal angle sharply rounded : radius emitted at a very acute angle, almost straight, with a markedly enlarged pterostigma and with uncus not extending quite as far as apex of postmarginal.

Head blue-green, with bronzy reflections on frontovertex strong and more or less extensive, on facial area weak or absent. Thorax above steely green, with some very weak violescent reflections when viewed obliquely. Pleura, propodeum and gaster brownish black, with pale bronzy reflection.

Antennae blackish to paler, with weak metallic reflections. Legs blackish brown, the mid and hind femora and tibiae paler in part, least so the hind tibiae : tarsi stramineous, the fore tarsi extensively, the mid and hind tarsi below and at segmental apices, pale brownish.

Redescribed from the following material. CEYLON: Peradeniya, 2 ♀, 11.vii.1937 (including holotype), *ex Planococcus lilacinus* (Ckll.), 1 ♀, 5.viii.1937, supposedly *ex Scymnus* sp. (Coccinellidae), (*R. H. Le Pelley*). INDIA: Orissa, Bhubaneswar, 1 ♀, 3.iii.1962, ex mealybug on "Paladhua" (*G. N. Das*). Material in British Museum (Natural History) and in Citrus Experiment Station, Riverside.

Neodiscodes martinii Compere

(Text-figs. 97, 99)

1931 *Neodiscodes martinii* Compere, *Univ. Calif. Publs Ent.* **5** (14) : 273–4.
1953 *Neodiscodes martinii* Compere; Kerrich *ex parte*, *Bull. ent. Res.* **44** (4) : 794–6 (excluding fig. 9).

Head, seen from above, with median length to breadth = 1 : 1·8 to 1·9 ; frontovertex to total breadth = about 1 : 5·6, with median ocellus about its own diameter from orbital margin : in side view longer than in *lepelleyi* Kerrich (cf. Text-fig. 96), not sharply curved ; in facial view with cheeks moderately rounded. Frontovertex with reticulate microsculpture of moderate strength ; with orbital piliferous punctures distinct, separated by about their own diameters or less; with larger punctures between ocelli large, in a loose reticulation, those before median ocellus decidedly larger, reticulate. Eyes moderately strongly hairy, the hairs discernible with difficulty × 25.

Antennal scape 2·2 times length of its greatest breadth.

Mesoscutum with reticulate microsculpture rather fine, moderately finer and more outstanding at sides, beset with piliferous punctures that mostly are separated by less than their own diameters in middle, but are finer and very much sparser at sides. Axillae and scutellum with microsculpture much coarser and more outstanding, with piliferous punctures about equally coarse but rather sparser, mostly separated by more than their own diameters. Scutellum relatively sharply pointed at apex (Text-fig. 99).

Fore wing twice length of its greatest breadth, with outer margin rather strongly curved and with anal angle rather strongly rounded (decidedly less so than in *Aenasius punctatus* Comp.) : radius emitted at an angle approaching 45°, quite strongly curved, with a poorly defined stigma, but tapering to a small uncus that does not extend quite as far as apex of postmarginal (the apex of which is difficult to make out with precision) (Text-fig. 97).

Head blue-green with bronzy reflections, merging to blue on facial area, fore part and hind margin of frontovertex. Thorax above a very dull blue-green. Pleura, propodeum and gaster brownish black, with weak bronzy reflection. Antennae blackish to paler, with weak metallic reflections, the pedicellus narrowly pale at apex. Leg colour as described for *lepelleyi* Kerrich.

Redescribed from the following. ERITREA: Nefasit, 1 ♀, 16.iv.1930, *ex Planococcus citri* (Risso) on *Olea chrysophylla* (*H. Compere*), (paratype): 1 ♀, same data but "*ex L. viridis*". Material in British Museum (Natural History).

Neodiscodes abengouroui (Risbec) **sp. rev.**

(Text-fig. 95)

1951 *Coccophoctonus abengouroui* Risbec, *Mém. Inst. franç. Afr. noire* **13** : 128, 145–6, 149.
1953 *Neodiscodes martinii* Compere ; Kerrich, *Bull. ent. Res.* **44** (4) : 793–5 *ex parte* (including fig. 9) [Mis-identification].
1955 *Neodiscodes martinii* Compere ; Risbec, *Agron. Trop., Nogent* **10** (2) : 236.

Head, seen from above (Text-fig. 95), with median length to breadth = 1 : 1·7 to 2·2 ; frontovertex to total breadth = 1 : 5·6 to 7·3, with median ocellus about two-thirds its own in diameter from orbital margin : in side view about as in *martinii* Comp., in facial view with cheeks weakly rounded. Frontovertex with reticulate microsculpture fine ; with orbital piliferous punctures distinct and sharp, separated by about their own diameters or much less ; with larger punctures between ocelli large, in a reticulation that sometimes is loose, those before median ocellus decidedly larger, reticulate (Text-fig. 95). Eyes densely and very strongly hairy, very distinctly so × 13.

Antennal scape about 2·1 times length of its greatest breadth.

Mesoscutum with reticulate microsculpture rather fine, more regular and outstanding than in *martinii* Comp., less regular and more outstanding at sides, beset with piliferous punctures that mostly are separated by less, often much less, than their own diameters in middle but are smaller and much sparser at sides. Axillae and scutellum with microsculpture about as on middle of mesoscutum, and with punctures about equally coarse or less so, usually sparser and separated by more than their own diameters. Scutellum bluntly pointed at apex.

Fore wing twice length of its greatest breadth, with outer margin moderately curved and with anal angle rather sharp : radius emitted at a slightly less acute angle than in *indicus* Naray. & Subba Rao, moderately curved near base but almost straight in more than apical half, with uncus that does not extend quite as far as apex of postmarginal.

Head blue-green to blue, with bronzy reflections more or less strong and extensive, on facial area often tending more to brassy. Thorax above steely green, with bronzy reflection weak to rather strong. Antennae blackish brown, with weak metallic reflections : scape and pedicellus markedly pale at apex, and basal flagellar segments similarly pale. Leg colour as described for *lepelleyi* Kerrich.

Redescribed from the following. GHANA: Tafo, 1 ♀, xi.1945, 7 ♀, 1947, 4 ♀, 1949, *ex Planococcoides njalensis* (Laing) on cacao (*A. H. Strickland*). IVORY COAST: Abengourou, 2 ♀, *ex Planococcoides njalensis* (Laing) (*F. Datiguy*); Divo, 5 ♀, 21.x.1951, *ex Planococcoides njalensis* (Laing) (*J. Magnin*).

This species, when reared from *Planococcoides njalensis* (Laing) on cacao in Ghana, was determined as *martinii* Compere. Later Mr. R. G. Donald, on the basis of host data, suspected that *Coccophoctonus abengouroui* Risbec was the same species. This identity was confirmed both by myself, and also by Monsieur Risbec who published the synonymy (1955). When studying the genus more intensively in 1966, I requested the loan of Risbec's type. Dr. R. M. Quentin kindly sent two slides, both labelled as type. One contains two female specimens from Ivory Coast, Abengourou, reared from *Pl. njalensis* (Laing), and I am convinced that these are the same as the species reared from the same host in nearby Ghana. I hereby restrict the selection of lectotype to these two specimens, but refrain from choosing between them since, on the mount, some features can be seen better on one and some on the other. The other slide contains the single specimen from Senegal, Bambey: this is in poor condition and I cannot determine it with confidence as the same species, though I believe it to be so. The specimens recorded from Kenya (Kerrich, 1953) as female and male are two males.

Text-fig. 95 of the present work was drawn from the same specimen as Fig. 9 of Kerrich, 1953, but at a very different angle, in order to correspond with Text-fig. 94 and to illustrate the macrosculpture in both species.

Neodiscodes subbaraoi sp. n.

Head, seen from above, relatively long, with median length to breadth = 1 : 1·7; frontovertex to total breadth = about 1 : 6·5, with median ocellus half its own diameter from orbital margin: in side view rather as in *lepelleyi* Kerrich (cf. Text-fig. 96) but more evenly curved; in facial view with cheeks scarcely rounded. Frontovertex with reticulate microsculpture fine; with orbital piliferous punctures distinct, separated by about their own diameters or less; with larger punctures between ocelli large and mostly not well separated, those before median ocellus very large and in a loose reticulation. Eyes strongly hairy, very distinctly so × 25.

Antenna relatively stout, the scape 2·0 times length of its greatest breadth, the pedicellus less than twice as long as broad, the sixth funicle segment more than 2½ times as broad as long, and the club about as broad as long.

Mesoscutum with reticulate microsculpture fine and regular, decidedly denser but little more outstanding at sides, beset with shallow piliferous punctures that mostly are separated by more than their own diameters in middle, and are very much sparser at sides. Axillae and scutellum with microsculpture a little more outstanding than on middle of mesoscutum, and with piliferous punctation sparse and irregular. Scutellum rounded at apex.

Fore wing twice length of its greatest breadth, with outer margin well curved and with anal angle well rounded: radius emitted at a moderately acute angle, moderately curved, with uncus that does not quite extend as far as apex of postmarginal.

Head deep blue-green, with weak bronzy reflections, the facial area and adjacent part of frontovertex deep blue. Thorax above with fundamental dull blue-green scarcely evident except peripherally, strongly overspread with dull bronzy. Pleura, propodeum and gaster as described for *indicus* Narayanan & Subba Rao. Antennae blackish, with metallic reflections very weak. Legs brownish black, with all femora and tibiae in large part much paler: tarsi stramineous, weakly darkened beneath and at segmental apices.

Holotype ♀. Hong Kong: " *ex* mealybug " (*S. Flanders*) (given to H. Compere, 17–iii.1954).

Paratypes. Hong Kong: 1 ♀ (same data as holotype). Java: Bogor, 1 ♀, 5.v.1937, *ex Planococcus lilacinus* (Ckll.) (*R. H. le Pelley*).

Holotype and the paratype from Java in British Museum (Natural History), paratopotype in Citrus Experiment Station, Riverside.

This species is named for Dr. B. R. Subba Rao in recognition of his contributions to our knowledge of the Chalcidoidea of economic importance in India.

Neodiscodes indicus Narayanan & Subba Rao

(Text-figs. 98, 100)

1960 *Neodiscodes indicus* Narayanan & Subba Rao, *Indian J. Ent.* **22** : 75–77.

Head, seen from above, with median length to breadth = 1 : 1·7 to 2·1 ; frontovertex to total breadth = 1 : 5·1 to 7·3, with median ocellus its own diameter from orbital margin or rather less : in side view about as in *lepelleyi* Kerrich (Text-fig. 96); in facial view with cheeks moderately rounded below, conspicuously though shallowly emarginate above. Frontovertex with reticulate microsculpture strong ; with orbital piliferous punctures very distinct, separated by rather more than their own diameters ; with larger punctures between ocelli rather large but mostly well separated, those before median ocellus larger, mostly well separated in hinder half but becoming reticulate above facial area. Eyes rather strongly hairy, distinctly so ×25.

Antennae rather stouter than in most species : antennal scape two and a quarter times length of its greatest breadth, sixth funicle segment about three times as broad as long, and club almost as broad as long.

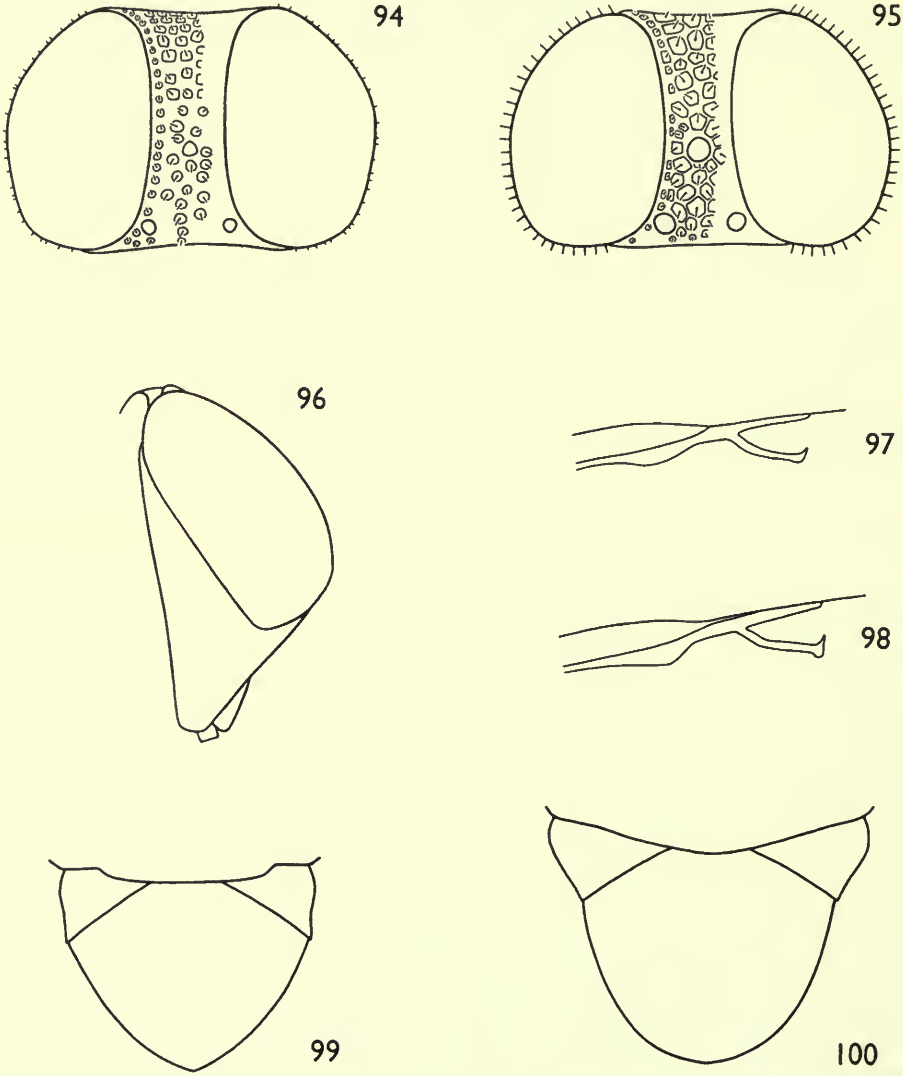
Mesoscutum in middle shining, having reticulate microsculpture very fine, but at sides dull, with the microsculpture coarser and much more outstanding, beset with piliferous punctures that usually are mostly separated by more than their own diameters in middle, but at sides are markedly shallower and much sparser. Axillae and scutellum with microsculpture decidedly more outstanding than on middle of mesoscutum but not much less shining, more sparsely beset with piliferous punctures of very mixed sizes. Scutellum rounded at apex (Text-fig. 100).

Fore wing twice length of its greatest breadth, with outer margin moderately curved and with anal angle relatively sharp : radius emitted at a very acute angle, slightly, sometimes moderately, curved, with a defined stigma, and with a small to moderate uncus that extends as far as apex of postmarginal (Text-fig. 98).

Head blue-green, often paler on frontovertex and deeper on facial area ; with reflections brassy to red-coppery, on frontovertex usually extensive, on facial area usually confined to lower part of inter-scrobal prominence but sometimes more extensive. Pronotum and mesoscutum dull blue-green, axillae and scutellum steely-green, all with considerable bright bronzy reflection. Pleura, propodeum and gaster brownish black to blackish brown, with weak bronzy reflection, the pleura and the propodeum at sides dull, with very weak reflection. Antennae having scape and pedicellus blackish with weak reflections, the scape sometimes markedly paler near apex ; having flagellum normally with two to five basal segments dull stramineous to pale testaceous, at least below, merging to the blackish brown funicle apex and club. Leg colour much as described for *lepelleyi* Kerrich but the amount of darkening very variable.

Redescribed from the following material. India: New Delhi, 1 ♀, 4–x.1957, ex " citrus scale " (*G. W. Angalet*); Puri, 1 ♀, 9.iv.1960, ex mealybug on *Casuarina*; Gwalior, Madhya Prad., 4 ♀, 9.ix.1959, ex grape-fruit mealybug (*S. U. Kittur*); Gwalior, 5 ♀, ex grape-fruit mealybug, per B. R. Subba Rao. W. Pakistan, nr.

Rawalpindi, Wah, 4 ♀, 11.viii.1961, ex mealybug on *Morus alba*, per *Comm. Inst. Biol. Control.* Material in British Museum (Natural History) and in U.S. National Museum.



FIGS. 94–100. *Neodiscodes* species, females. 94–95. Head, seen from above, of 94, *N. comperei* sp. n. and 95, *N. abengouroui* (Risb.). 96. Head, in dextro-lateral view, of *N. lepelleyi* Kerrich. 97–98. Part of right fore-wing, of 97, *N. martinii* Comp. and 98, *N. indicus* Naray. & Subba Rao. 99–100. Scutellum and axillae of 99, *N. martinii* Comp. and 100, *N. indicus* Naray. & Subba Rao.

KEY TO SPECIES OF *NEODISCODES* COMPERE : FEMALES

1 Smaller species of length scarcely 1 mm.: frontovertex at narrowest two-ninths the total head breadth: uncus not nearly reaching apex of postmarginal: [median ocellus about 1½ times its own diameter from orbital margin: radius emitted at about 45°]: Hong Kong . . . . **parvus** sp. n.

Larger species, length 1½ to 2 mm.: frontovertex less than a fifth the total head breadth: uncus reaching very nearly to apex of postmarginal or even slightly beyond: [the other two characters not combined, the radius emitted at a much acuter angle except in *martinii* Comp. (Text-fig. 97)] 2

2 Fore wing 2¼ times length of its greatest breadth, with outer margin almost straight: median ocellus about 1½ times its own diameter from orbital margin: head, seen from above (Text-fig. 94), in side view relatively long, especially below, and sharply curved: frontovertex with green coloration mainly overspread with dull bronzy: Africa . . . . **comperei** sp. n.

Fore wing twice length of its greatest breadth, with outer margin moderately curved: median ocellus about its own diameter from orbital margin or less: head in side view relatively shorter, less sharply curved: frontovertex normally with green coloration conspicuous 3

3 Eyes weakly and rather sparsely hairy (× 45): inter-ocellar area having punctures of only moderate strength with wide interpsaces (as in *comperei* sp. n., Text-fig. 94): antennal scape 2·6 times length of its greatest breadth: [median ocellus half its own diameter from orbital margin]: Ceylon and India . . . **lepelleyi** Kerrich

Eyes moderately to strongly hairy: inter-ocellar area with stronger punctures in a reticulation or almost so (e.g. Text-fig. 95): antennal scape 2¼ times length of its greatest breadth or less 4

4 African species: head in side view longer than in alternate: antennae of normal build for the genus: scutellum somewhat pointed at apex (e.g. Text-fig. 99) . . . 5

Asiatic species: head in side view of length about as in *lepelleyi* Kerrich (Text-fig. 96): antennae relatively stouter: scutellum rounded at apex (Text-fig. 100): [eyes not so very strongly and densely hairy as in *abengouroui* (Risb.) 6

5 Median ocellus about its own diameter from orbital margin: eyes moderately strongly hairy, the hairs discernible with difficulty × 25: microsculpture on axillae and scutellum much coarser than on middle of mesoscutum: scutellum relatively sharply pointed at apex (Text-fig. 99): radius emitted at an angle approaching 45°, moderately curved (Text-fig. 97) . . . . **martinii** Compere

Median ocellus about two-thirds its diameter from orbital margin: eyes densely and very strongly hairy, very distinctly so × 13 (Text-fig. 95): microsculpture on axillae and scutellum about as on middle of mesoscutum: scutellum more bluntly pointed at apex: radius emitted at a much acuter angle and less curved **abengouroui** (Risbec)

6 Median ocellus half its own diameter from orbital margin: frontovertex with reticulate microsculpture fine: mesoscutum with reticulate microsculpture little more outstanding at sides than in middle: antennae without paler colouring: Hong Kong, Java . . . . **subbaraoi** sp. n.

Median ocellus its own diameter from orbital margin or rather less: frontovertex with reticulate microsculpture strong: mesoscutum with reticulate microsculpture much more outstanding at sides than in middle: antennae having flagellum normally with two to five basal segments pale, at least below: India and W. Pakistan **indicus** Narayanan & Subba Rao

EURYRHOPALUS Howard, 1898

Only two species have previously been ascribed correctly to this genus.

Euryrhopalus pretiosus (Timberlake)

(Text-fig. 113)

1924 *Synaspidia pretiosa* Timberlake, *Proc. Hawaii ent. Soc.* **5** (3) : 397–402.
1942 *Euryrhopalus pretiosus* (Timberlake) Gahan, *Proc. U.S. natn. Mus.* **92** : 49.

Head, seen from above, less than twice as broad as median length : frontovertex one-sixth the total head breadth, with median ocellus two-thirds its own diameter from orbital margin (similar to Text-fig. 101) : in side and facial views as described for *kirkpatricki* (Kerrich). Frontovertex with reticulate microsculpture fine behind median ocellus, very fine before it ; with orbital piliferous punctures very fine ; with larger punctures between ocelli of less than moderate strength, separated by less than their own diameters, those before median ocellus of moderate strength, situated in two rows diverging with the orbits. Piliferous punctures in malar area rather fine. Eyes rather sparsely hairy, discernibly so × 25.

Mandibles tridentate, the middle tooth the longest.

Antenna with scape four times length of its greatest breadth ; with pedicellus twice as long as its greatest breadth ; with funicle segments short cup-shaped to short cylindrical, the club one-sixth longer than the combined funicle segments and two-thirds as broad as long.[4]

Mesoscutum and axillae shining, with reticulate microsculpture very fine, beset with piliferous punctures that are rather fine and of moderate depth, separated by about or more than their own diameters : scutellum similar, but with piliferous punctures finer, often very much finer, and relatively more separated. Scutellum very obtuse at apex (Text-fig. 113), margined by a sharp ridge or fold. Propodeum with spiracles sub-circular, larger than in other species of this genus (Text-fig. 113).

Fore wings, except on speculum, uniformly weakly infuscate, markedly broader, relatively, than in *kirkpatricki* (Kerrich), their length (from apex of tegula) under twice their greatest breadth, with outer margin and anal angle moderately rounded : postmarginal three and two-thirds times length of marginal, and radial, which has a long, pointed uncus, two and two-thirds times.

Head blue-green to blue, the frontovertex often with some red-violet and bronzy reflection, the mouth region and hinder genae dull bronzy. Dorsum of thorax with fundamental blue-green overspread with metallic reflection which on scutellum and axillae is bright bronzy, on mesoscutum weaker and sometimes more violaceous. Coloration of pleura, propodeum and gaster as described for *kirkpatricki* (Kerrich). Antennal coloration as described for *kirkpatricki* (Kerrich), but weaker. Legs blackish brown with metallic reflections, the tarsi pale brown to whitish, somewhat darkened, the mid femora at apex and mid tibiae at base translucent.

Redescribed from the following. MEXICO: Vera Cruz, 5 ♀, 1922–23 (holotype and paratypes), ex mealybug on *Tillandsia* and ex *Dysmicoccus brevipes* (Ckll.) on Bromeliaceous plants (*H. J. Osborn*). GUATEMALA: San Sebastian, 1 ♀, v.1934, per *W. Carter*; Guatemala, unlocalized, 1 ♀, 26.1.1937, *ex Dysmicoccus brevipes* (Ckll.), (*E. G. Salas*) (shipped to Hawaii).

Holotype in Bishop Museum, Honolulu: material in collections of Hawaiian Sugar Planters' Association and of State Department of Agriculture, Honolulu, in Citrus Experiment Station, Riverside, in U.S. National Museum and in British Museum (Natural History).

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[4] In the figure of Timberlake (1924), the pedicellus and flagellum are represented as one would wish them to be but, in the specimen illustrated, the scape was evidently foreshortened either by lateral curvature or by coming to rest in a different plane when the slide mount was made.

Euryrhopalus schwarzi Howard

(Text-fig. 102)

1898 *Euryrhopalus schwarzi* Howard, *Proc. U.S. natn. Mus.* **21** : 237.
1942 *Euryrhopalus schwarzi* Howard ; Gahan, *Ibidem,* **92** : 49.

The unique type of this species is located in the U.S. National Museum. The head was fragmented on a slide by A. A. Girault. Dr. B. D. Burks, referring to specimens of *pretiosus* (Timb.) and *kirkpatricki* (Kerrich), my manuscript description of those species and copies of certain figures, very kindly sent me a description of the type of *schwarzi* and answered supplementary questions. Girault's slide of the head was made available to me on loan. From this slide I was not able to describe the sculpture or colour, but I was able to draw two fragments separately and piece the two drawings together, thus producing Text-fig. 102, and also to measure the antennal segments. The following description is compounded from these sources.

Head with frontovertex very narrow, the median ocellus a quarter its diameter from orbital margin (Text-fig. 102).

Antenna with scape nearly five times length of its greatest breadth; with pedicellus more than twice length of its greatest breadth; with funicle segments short cup-shaped to short cylindrical, the sixth 2·3 times as long as broad, the club slightly longer than the combined funicle segments and three-quarters as broad as long.

"Mesoscutum and axillae subshining, with surface almost smooth, only very indistinct surface sculpture present: piliferous punctures extremely shallow, separated by more than their own diameters. Scutellum slightly less shining, with faint reticulate microsculpture: piliferous punctures as on mesoscutum." Scutellum very obtuse at apex (cf. Text-fig. 113), margined by a sharp ridge or fold. Propodeum with spiracles very large (cf. Text-fig. 113), and with white hair lateral to them "very dense and long".

"Fore wing twice as long as broad (75 : 38), with outer and anal margins rounded much as in *kirkpatricki*: postmarginal 3½ times length of marginal, and radial 2½ times length of marginal: apex of radial vein vaguely defined, with a faint uncus present."

"Thorax and abdomen uniformly black: fore and hind legs, except for tarsi, black: mid legs, except for tarsi, dark brown," the femur at apex and tibia at base not noticeably paler: "all tarsi white, apical segment of each slightly darkened. Fore wing with a prominent dark brown shadow enveloping apex of submarginal vein, marginal, postmarginal and radial veins, and extending across wing to its middle".

Redescribed from the following: U.S.A.: Florida, Biscayne (Bay), 1 ♀, 16.v. (holotype). Holotype in U.S. National Museum (cat. no. 5029).

Euryrhopalus saccharicola (Gahan) **comb. n.**

(Text-fig. 111)

1942 *Blepyrus saccharicola* Gahan, *Proc. U.S. natn. Mus.* **92** : 47–49.

Head from above moderately broad, median length to breadth = 1 : 2·1 to 2·3 ; frontovertex about one-seventh the total head breadth (more in small specimens), with median ocellus more than half its diameter from orbital margins : in side view relatively distinctly shorter than in *kirkpatricki* (Kerrich), rather evenly curved ; in facial view with cheeks relatively short and evenly rounded. Frontovertex with reticulate microsculpture regular and of moderate strength behind median ocellus, rather fine before it; with orbital piliferous punctures very fine; with larger punctures between ocelli of moderate strength and before median ocellus obviously finer, in both positions not scattered or in rows, but separated by much less than their own diameters. Piliferous punctures in malar area rather fine. Eyes rather closely hairy, discernibly so × 45.

Mandibles tridentate, the middle tooth the longest.

Antenna with scape slightly expanded below, five times length of its greatest breadth; with pedicellus twice length of its greatest breadth; with funicle segments short cup-shaped to short-cylindrical, the sixth 1½ times as broad as long, and club one-quarter longer than combined funicle segments and 1·7 times as long as broad.

Mesoscutum with reticulate microsculpture fine, beset with fine but dense piliferous punctures, which are separated by about or less than their own diameters. Scutellum with reticulate microsculpture still finer but much more outstanding, giving the sclerite a velvety appearance: pilosity less dense than on mesoscutum. Axillae intermediate in sculpture between mesoscutum and scutellum.

Fore wings relatively elongate, about 2·3 times as long as broad, with outer margin and anal angle well rounded: marginal vein relatively long, just over half length of postmarginal, and almost as long as the radial, which has a large uncus (Text-fig. 111): hair rows on costal cell relatively dense.

Head blue-green to dull blue, almost entirely overspread with dull violet to bronzy. Pronotum, mesoscutum, tegulae, axillae and scutellum with fundamental blue-green to blue showing, often rather weakly, through the bronzy to red-violet reflection. Pleura, propodeum and gaster brownish black, with weak but bright blue-green and bronzy reflection. Antennal scape yellow, slightly darkened at apex: pedicellus and flagellum blackish brown with weak green reflections, the pedicellus pale at apex and beneath. Legs having coxae, femora and fore trochanters blackish brown, with weak metallic reflections, the femora at apex and the mid and hind trochanters paler: tibiae and tarsi yellowish white, the tibiae a little darkened near base.

Redescribed from the following. U.S.A.: California, Fontana, 4 ♀, 1953, reared on *Phenacoccus solani* Ferr., *Commonwealth Institute of Biological Control*. Material in British Museum (Natural History).

Euryrhopalus pulchrior sp. n.

(Text-figs. 104, 112)

Head, seen from above, with median length to breadth = 1 : 1·8; frontovertex nearly one-seventh the total head breadth, with median ocellus two-thirds its own diameter from orbital margin: in side view hardly shorter than in *kirkpatricki* (Kerrich) and almost evenly rounded; in facial view with cheeks well rounded, very much shorter: toruli slightly less than their own length from eye (Text-fig. 104). Frontovertex with reticulate microsculpture fine but rather outstanding; with orbital piliferous punctures relatively strong, separated by about or rather more than their own diameters; with larger punctures between ocelli of moderate strength, separated by less than their own diameters; with punctation for some distance before median ocellus shallower and smaller, but then again becoming larger and attaining an almost reticulate condition above scrobal impression. Piliferous punctures on malar area fine. Eyes coarsely and closely hairy.

Mandibles tridentate, the middle tooth the longest.

Antenna with scape slightly expanded beneath, about five times length of its greatest breadth; with pedicellus twice length of its greatest breadth; with first five funicle segments short cup-shaped, the sixth 2½ times as broad as long and club strongly expanded, three-quarters longer than the combined funicle segments and twice as long as broad.

Mesoscutum and axillae with reticulate microsculpture strong and sharp, beset with moderate piliferous punctures that mostly are separated by rather more than their own diameters. Scutellum with microsculpture similar, but becoming gradually a little finer towards apex, and with punctures much shallower, finer and sparser.

Fore wings up to and below radius rather strongly infuscate, weakly so above it, and beyond rather broad, about 2·1 times as long as broad, with outer margin and anal angle well rounded : postmarginal vein 2·0 times and radial, which has a sharp uncus, 1·8 times length of marginal ; thus, the marginal is relatively long, the postmarginal is relatively short and does not extend far beyond the radial (Text-fig. 112).

Head bright green, around and before the median ocellus with bright brassy reflections, behind median ocellus and on hinder genae more blue-green. Pronotum bright blue-green above. Mesoscutum, axillae, scutellum, sides of propodeum and gaster a rather duller green than the head, and overspread with duller brassy to bronzy reflections : mesopleura and propodeum above steely black with weak reflections. Antennae yellow-testaceous : scape in about basal half, pedicellus except at apex and beneath, and club infuscate with moderate metallic reflections, the basal funicle segments slightly darkened above. Coxae a similar green to the sides of propodeum : legs otherwise yellow-testaceous, the fore and hind femora in about basal half, and the trochanters infuscate with metallic reflections, and the fore tibiae and mid femora with slight darkening.

Holotype ♀. JAMAICA: Hope Gardens, v.1964, on *Acalypha* (*F. D. Bennett*). Holotype in British Museum (Natural History).

This species is not a typical *Euryrhopalus* in appearance but is more suggestive of an *Aenasius*.

***Euryrhopalus tenuiscapus* sp. n.**

(Text-fig. 106)

Head, seen from above, moderately broad, median length to breadth = 1 : 2·1 ; frontovertex one-sixth the total head breadth, with median ocellus nearly its own diameter from eye : in side view relatively distinctly shorter than in *kirkpatricki* (Kerrich), quite strongly curved above but weakly so below ; in frontal view with cheeks moderately curved and evenly narrowed to mouth : toruli much more than their own length from eye. Frontovertex with reticulate microsculpture rather strong behind median ocellus, of moderate strength before it ; with orbital piliferous punctures relatively close together and only moderately fine ; with larger punctures between ocelli of less than moderate strength and irregular, some separated by about their own diameters and others almost contiguous, those before median ocellus of similar strength, situated in two rows diverging with the orbits but also with others between. Piliferous punctures on malar area fine. Eyes closely hairy, distinctly so × 45.

Mandibles tridentate, the middle tooth the longest, the uppermost small and well set back.

Antenna (Text-fig. 106) with scape weakly expanded below, slender, 6½ times length of its greatest breadth ; with pedicellus 2½ times length of its greatest breadth ; with funicle segments short cup-shaped, the sixth twice as broad as long, and club very strongly expanded, over a quarter longer than combined funicle segments and twice as long as broad.

Mesoscutum and axillae with reticulate microsculpture fine, beset with piliferous punctures that are very shallow and rather fine, and are mostly separated by more than their own diameters. Scutellum with microsculpture much more regular and outstanding, and beset with fine piliferous punctures that are about as dense as on mesoscutum.

Fore wing shape as described for *kirkpatricki* (Kerrich) : postmarginal five times length of marginal, and radial, which has a small uncus, three times.

Head blue-green to blue, almost entirely overspread with dull violet to bronzy. Colour of thorax, propodeum and gaster as described for *saccharicola* (Gah.). Antennae blackish brown, with weak metallic reflections, the scape and pedicellus paler at apex. Legs brownish black to blackish brown, with weak metallic reflection : tarsi, and mid and hind tibiae narrowly at apex, pale brown to whitish.

Holotype ♀. U.S.A.: California, Fillmore, 7.x.1936, *ex Phenacoccus* sp. (*J. D. Maple*). Holotype in U.S. National Museum.

***Euryrhopalus rhopoideus* sp. n.**

(Text-figs. 105, 107, 109, 114)

Head, seen from above, a little less than twice as broad as its median length ; frontovertex one-seventh the total head breadth, with median ocellus two-thirds its diameter from orbital margin : in side view relatively much shorter than in *kirkpatricki* (Kerrich), but rather evenly curved (Text-fig. 109) ; in frontal view with cheeks rather long and evenly curved : toruli nearly twice their own length from eye (Text-fig. 105). Sculpture of frontovertex as described for *pretiosus* (Timb.), but the punctures before median ocellus of less than moderate strength. Piliferous punctures on malar area fine. Eyes closely hairy, just distinctly so × 25.

Mandibles tridentate, the uppermost tooth small and well set back, the lower two very sharp, the middle one the longer (Text-fig. 105).

Antenna (Text-fig. 107) with scape slightly expanded beneath, more than five times length of its greatest breadth ; with pedicellus twice length of its greatest breadth ; with flagellum relatively only moderately clavate, the club not abruptly broader than the funicle : with first five funicle segments very short cup-shaped, the sixth twice as broad as long, and club one-third longer than the combined funicle segments and twice as long as broad.

Dorsum of thorax as described for *tenuiscapus* sp. n. : see also Text-fig. 114.

Fore wing shape as described for *saccharicola* (Gah.), but broader than in that species, about two and a quarter times as long as broad : postmarginal four times length of marginal, and radial, which has a moderate uncus, two and a third times.

Head blue-green to blue, almost entirely overspread with dull violet to bronzy. Colour of thorax, propodeum and gaster as described for *saccharicola* (Gah.). Antennae a rather pale brownish black, with weak, predominantly green, metallic reflections : scape, pedicellus, and club beneath, paler at apex. Legs brownish black, the fore tibiae at extreme base and apex and the mid tibiae a rich brown ; tarsi pale brown to whitish.

Holotype ♀. U.S.A.: Texas, Denison, 15.vi.1938, on peach (*Christenson & Clancy*). Holotype in U.S. National Museum.

***Euryrhopalus carolinensis* sp. n.**

(Text-fig. 101)

Head, seen from above, twice as broad as its median length : frontovertex one-seventh the total breadth, with ocelli relatively large, the median ocellus just under half its diameter from orbital margins (Text-fig. 101) : in side view relatively distinctly shorter than in *kirkpatricki* (Kerrich), quite strongly curved above but weakly so below ; in frontal view with cheeks longer than in *kirkpatricki* (Kerrich), weakly narrowed to where they turn sharply in to mouth region. Frontovertex sculpture as described for *pretiosus* (Timb.). Piliferous punctures in malar area rather fine. Eyes closely hairy, quite distinctly so × 25.

Mandibles rather stout, tridentate, the middle tooth the longest, the uppermost small and well set back.

Antenna with scape more than slightly expanded, four times length of its greatest breadth ; with pedicellus relatively elongate, three times length of its greatest breadth ; with funicle segments short cup-shaped to short-cylindrical, the sixth nearly twice as broad as long, and club one-half longer than combined funicle segments and nearly two-thirds as broad as long.

Mesoscutum and axillae with reticulate microsculpture fine, beset with piliferous punctures that are of moderate depth and mostly are separated by less than their own diameters. Scutellum with microsculpture more regular and outstanding, and beset with fine piliferous punctures that are about as dense as on mesoscutum. Propodeum weakly hairy behind spiracle.

Fore wing shape as described for *kirkpatricki* (Kerrich), about two and a quarter times as long as broad : postmarginal five times length of marginal, and radial, which has a moderate uncus, about two and a half times length of marginal.

Head dull blue-green, almost steely green, overspread on frontovertex weakly and on lower face and genae strongly with blackish violet. Colour of dorsum of thorax as described for *saccharicola* (Gah.). Pleura, propodeum and gaster brownish black, with weak metallic reflection. Antennae brownish black, with blue-green to bronzy reflections which are strongest on scape and pedicellus. Legs brownish black with metallic reflections, the tibiae and fore femora only narrowly paler at apex : tarsi stramineous with infusions of pale brown, the fore and hind tarsi above and all at apex slightly darkened.

Holotype ♀. U.S.A.: N. Carolina, L. Junaluska, 24.v.1954 (*H. V. Weems*). Holotype in U.S. National Museum.

Euryrhopalus kirkpatricki (Kerrich), **comb. n.**

(Text-figs. 103, 108, 110)

1953 *Neodiscodes kirkpatricki* Kerrich, *Bull. ent. Res.* **44** (4) : 793–5.

1954[5] *Neodiscodes kirkpatricki* Kerrich ; Kirkpatrick, *Rep. Cacao Res.* (1952) : 68. Imperial College of Tropical Agriculture, Trinidad.

Head, seen from above, about twice as broad as its median length : frontovertex exceptionally narrow, at narrowest less than a tenth the total head breadth, with median ocellus about a quarter its diameter from orbital margin (Text-fig. 103) : in side view (Text-fig. 110) relatively long and evenly curved ; in facial view with cheeks relatively short and evenly rounded. Frontovertex with reticulate microsculpture regular and of moderate strength behind median ocellus, very fine before it ; with orbital piliferous punctures very fine but regular ; with larger punctures between ocelli of moderate strength, mostly separated by less than their own diameters, and before median ocellus obviously finer and more scattered. Piliferous punctures in malar area moderate. Eyes moderately closely hairy, just distinctly so × 45.

Mandibles tridentate, the middle tooth much the longest.

Antenna (Text-fig. 108) with scape slightly expanded below, about 4½ times length of its greatest breadth ; with pedicellus almost twice length of its greatest breadth ; with funicle segments short cup-shaped to short-cylindrical, the sixth at longest over twice as broad as long, and club about one-half longer than combined funicle segments and two-thirds as broad as long.

Mesoscutum and axillae shining, with microsculpture extremely fine, beset with rather shallow piliferous punctures that mostly are separated by about or less than their own diameters. Scutellum much less shining, with reticulate microsculpture moderately coarse, regular and outstanding ; with piliferous punctures sharper than on mesoscutum, in greater part rather dense but posteriorly separated by much more than their own diameters. Scutellum margined at apex by a sharp ridge or fold. Propodeum coarsely and densely white-hairy round spiracle.

Fore wings relatively considerably broader than in *saccharicola* (Gah.), but well over twice as long as broad, with outer margin rather weakly and anal angle only moderately rounded : postmarginal 3½ times length of marginal, and radial, which has a small uncus, 2½ times length of marginal.

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[5] This part was published bearing the date November 1953, which was actually the date on which the material was sent from the London office of the College to the printer. The late Dr. W. J. Hall was definite that the publication was not available earlier than 11th January, 1954. Kirkpatrick attributed this and other species to Kerrich and not to himself : his brief but possibly valid descriptions were not intended to, and did not in fact antedate the descriptions of Kerrich published on 15th December, 1953.

Head blue-green to blue, often with much red-violet on frontovertex ; the shining facial area blue-green with brassy reflection, the mouth region and sometimes hinder genae or ocellar area dull bronzy. Pronotum, mesoscutum, tegulae, axillae and scutellum fundamentally blue-green, the mesoscutum, except peripherally, with conspicuous red-violet reflection, the remaining parts, notably the scutellum generally, strongly bronzy. Pleura, propodeum and gaster brownish black with metallic reflections predominantly blue-green and bronzy, the blue-green most conspicuous at sides of propodeum, the gaster paler beneath. Antennae blackish brown, with rather weak green metallic reflections, which are strongest on scape and pedicellus ; the two latter segments narrowly pale at apex. Legs brownish black, with weak metallic reflections, merging to pale brown : tarsi pale brown to whitish, very little darkened at apex.

Redescribed from the following material. COLOMBIA: nr. Palmira, 3 ♀, i.1953, "*ex* Coccid" (*D. J. Taylor*). TRINIDAD: I.C.T.A., 14 ♀ (including holotype) 1950 *ex Dysmicoccus* sp. near *brevipes* (Ckll.) on cacao (*T. W. Kirkpatrick*). PANAMA: Canal Zone, Paraiso, 1 ♀, i.1911 (*E. A. Schwarz*). Material in U.S. National Museum, Citrus Experiment Station, Riverside, Bishop Museum, Honolulu, and British Museum (Natural History).

Euryrhopalus propinquus sp. n.

Very closely related to *kirkpatricki* (Kerrich), differing as follows : head, seen from above, relatively long, 1·5 to 1·7 times as broad as its median length ; frontovertex between an eighth and a tenth the total head breadth, with median ocellus over a quarter its diameter from orbital margin (more obviously separated therefrom than in *kirkpatricki*) : in facial view with eyes diverging less strongly. Frontovertex with microsculpture behind median ocellus fine, with larger punctures between ocelli of more than moderate strength and sometimes almost contiguous, those before median ocellus rather irregularly placed though tending to be in two diverging rows. Eyes weakly and sparsely hairy.

Antenna with scape somewhat broader, 3½ to 4 times length of its greatest breadth.

Mesoscutum and axillae with small piliferous punctures that are clearly separated by more than their own diameters : scutellum with piliferous punctures shallow, rather inconspicuous and relatively sparse.

Fore wings relatively elongate, about 2·3 times as long as broad, with outer margin weakly and anal angle rather well rounded ; postmarginal four times length of marginal, and radial, which has a large uncus, 2½ times length of marginal.

Head a rather bright blue-green ; pronotum and mesoscutum conspicuously dark blue-green except peripherally : pleura, propodeum and gaster paler than in *kirkpatricki*.

Holotype ♀. HAWAIIAN IS.: Oahu, 25.viii.1941, *ex Dysmicoccus brevipes* (Ckll.) on *Carissa* sp. (*D. T. Fullaway*).

Paratypes the following. BRAZIL: 27° 11′ S., 52° 23′ W., 1 ♀, 1937 (*F. Plaumann*). BRITISH GUIANA: 1 ♀, 23.xi.1936, "parasitic on *P. brevipes*" (*E. G. Salas*) (shipped to Hawaii). HAWAIIAN IS.: Oahu, 1 ♀ (same data as holotype); 1 ♀, 10.iii.1956, *ex Dysmicoccus brevipes* (Ckll.) on sugarcane (*J. W. Beardsley*); Barber's Point, 1 ♀, iv.1959, *ex Dysmicoccus neobrevipes* Beardsley on "cat's claw" (*J. W. Beardsley*); Lanikai, 3 ♀, x.1965, *ex Dysmicoccus neobrevipes* Beardsley on sea grape (*C. J. Davis*).

Holotype in Bishop Museum, Honolulu: paratypes in collection of Hawaiian Sugar Planters' Association, in Hawaii Agricultural Experiment Station, in U.S. National Museum and in British Museum (Natural History).

KEY TO SPECIES OF *EURYRHOPALUS* HOWARD : FEMALES

1 Scutellum shining, very obtuse at apex, where it is margined by a sharp ridge or fold: propodeum with spiracles especially large (Text-fig. 113) 2

Scutellum not shining, much less obtuse at apex, and not margined there in all species; propodeum with spiracles smaller (e.g. Text-fig. 114) 3

2 Head with frontovertex less narrow, the median ocellus two-thirds its own diameter from orbital margin (similar to Text-fig. 101): antennal scape four times length of its greatest breadth: pilosity around propodeal spiracle of moderate length and density: fore wings, except on speculum, uniformly weakly infuscate; propodeum conspicuously blue-green on sides: mid femora at apex and mid tibiae at base translucent . . . . ***pretiosus*** (Timberlake)

Head with frontovertex very narrow, the median ocellus a quarter its own diameter from orbital margin (Text-fig. 102): antennal scape nearly five times length of its greatest breadth: pilosity beside propodeal spiracle very dense and long: fore wings with prominent dark brown infuscation enveloping apex of submarginal, the marginal, postmarginal and radial veins and extending across to middle of wing: no blue-green colour on the propodeum: mid femora at apex and mid tibiae at base not noticeably paler . . . . ***schwarzi*** Howard

3 Marginal vein relatively long, the postmarginal not quite twice the length of the marginal (Text-fig. 111): scutellum of velvety appearance, due to the reticulate microsculpture being very fine and outstanding . . . . . ***saccharicola*** (Gahan)

Marginal vein relatively shorter, the postmarginal at least three times length of marginal: scutellum not presenting a velvety appearance, the microsculpture being only moderately fine and outstanding 4

4 Median ocellus more than half its diameter from orbital margin (Text-figs. 104–5): antennal scape only slightly expanded beneath, about five times length of its greatest breadth or more 5

Median ocellus half its diameter from orbital margin or less: antennal scape more distinctly expanded below, about four and a half times length of its greatest breadth or less 7

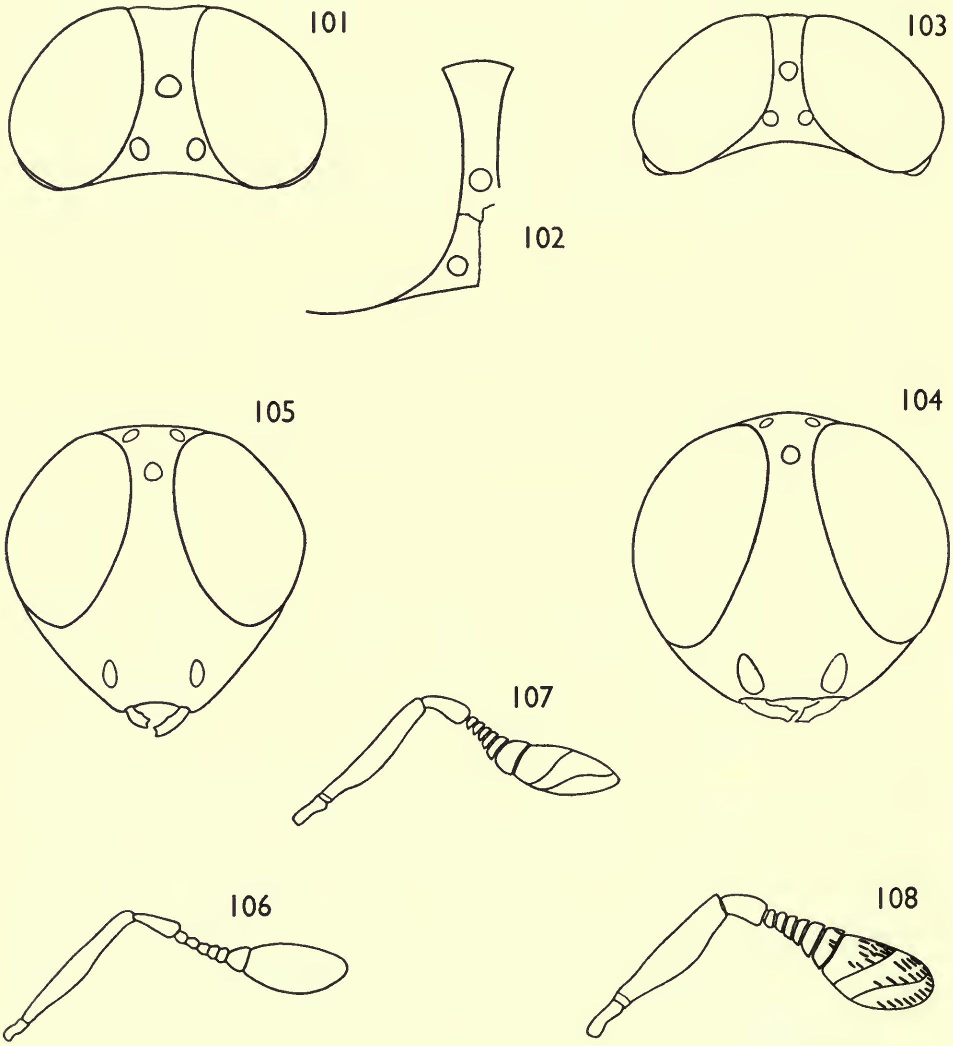
5 Head, in facial view, with cheeks short and toruli slightly less than their own length from eye (Text-fig. 104): punctation before median ocellus of moderate strength, and attaining an almost reticulate condition above scrobal impression: eyes coarsely hairy: microsculpture on scutellum similar to that on mesoscutum, the punctation moderately coarse and dense on mesoscutum but much finer and sparser on scutellum: postmarginal vein only a little longer than radial: head bright green, and dorsum of thorax very conspicuously green: hind tibiae yellow-testaceous: Jamaica . . . . ***pulchrior*** sp. n.

Head, in facial view, much longer, and toruli much more than their own length from eye (e.g. Text-fig. 105): punctation before median ocellus of less than moderate strength, the punctures mostly in longitudinal rows and well-separated: eyes not coarsely hairy: microsculpture much more outstanding on scutellum than on mesoscutum, the punctation rather fine and about equally dense on both: postmarginal vein much longer than radial: head and dorsum of thorax mainly overspread with dull colouring: hind tibiae in greater part darkened 6

6 Antennal scape exceptionally slender, six and a half times length of its greatest breadth, and club abruptly broader than funicle (Text-fig. 106): larger punctures before median ocellus arranged in two rows diverging with the orbits but with other punctures between: mid tibiae blackish brown, rather narrowly paler at apex: California . . . . ***tenuiscapus*** sp. n.

Antennal scape rather over five times length of its greatest breadth, and club not abruptly broader than funicle (Text-fig. 107): frontovertex between those diverging rows impunctate or almost so: mid tibiae mainly a rich brown, very little darkened: Texas . . . . ***rhopoideus*** sp. n.

7 Frontovertex wider, one-seventh the total head breadth: ocelli relatively large (Text-fig. 101): eyes closely and strongly hairy, very distinctly so × 25: head in side view considerably shorter, weakly curved below: pedicellus three times length of its greatest breadth: microsculpture of mesoscutum moderately fine: scutellum not margined at apex: propodeum weakly hairy behind spiracle: N. Carolina **carolinensis** sp. n.

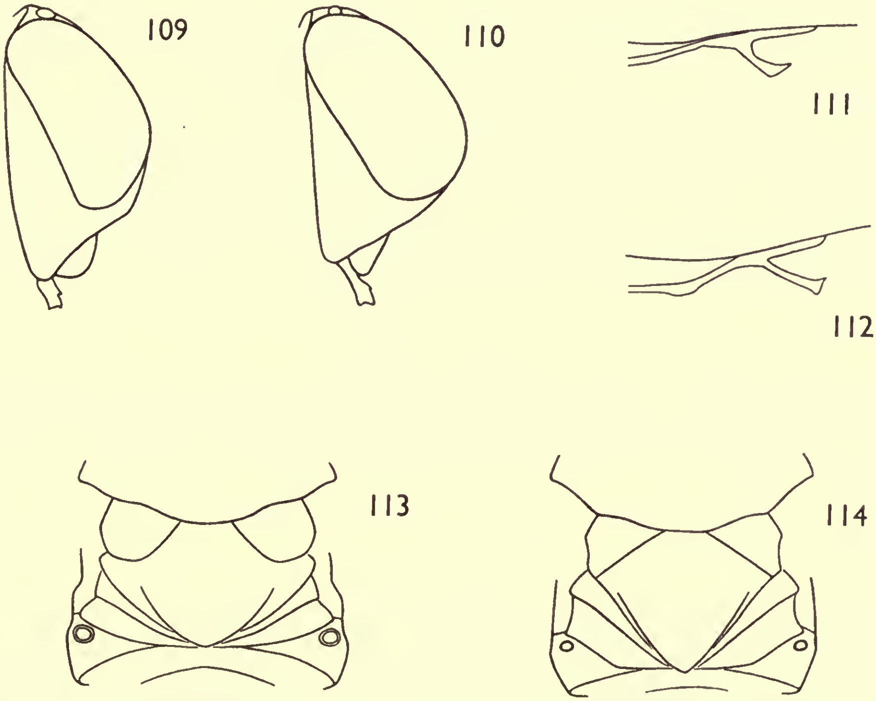


Figs. 101–108. *Euryrhopalus* species, females. 101–103. Head, seen from above, of 101, *E. carolinensis* sp. n., 102, *E. schwarzi* How. (fragmented) and 103, *E. kirkpatricki* (Kerrich). 104–105. Head, in facial view, of 104, *E. pulchrior* sp. n. and 105, *E. rhopoideus* sp. n. 106–108. Left antenna, in dextro-lateral view, of 106, *E. tenuiscapus* sp. n., 107, *E. rhopoideus* sp. n. and 108, *E. kirkpatricki* (Kerrich).

Frontovertex narrow, one-eighth to one-tenth the total head breadth or less: ocelli relatively smaller: eyes weakly and sparsely hairy, just discernibly so × 45: head in side view longer, strongly curved below (Text-fig. 110): pedicellus under twice length of its greatest breadth (Text-fig. 108): microsculpture of mesoscutum extremely fine: scutellum at apex margined by a sharp fold: propodeum coarsely and densely white-hairy round spiracle 8

8 Head, seen from above, about twice as broad as its median length: frontovertex less than a tenth the total head breadth, with median ocellus about a quarter its diameter from orbital margin (Text-fig. 103): reticulate microsculpture behind median ocellus of moderate strength: mesoscutum and axillae with moderate piliferous punctures separated by about or less than their own diameters: scutellum with piliferous punctures moderately fine and dense . . . ***kirkpatricki*** (Kerrich)

Head, seen from above, relatively long, 1·5 to 1·7 times as broad as its median length: frontovertex one-eighth to one-tenth the total head breadth, with median ocellus over a quarter its diameter from orbital margin (and more obviously separated therefrom than in alternate): reticulate microsculpture behind median ocellus finer: mesoscutum and axillae with small piliferous punctures clearly separated by more than their own diameters: scutellum with piliferous punctures relatively small, shallow and sparse . . . . ***propinquus*** sp. n.



FIGS. 109–114. *Euryrhopalus* species, females. 109–110. Head, in dextro-lateral view, of 109, *E. rhopoideus* sp. n. and 110, *E. kirkpatricki* (Kerrich). 111–112. Part of right fore wing of 111, *E. saccharicola* (Gah.) and 112, *E. pulchrior* sp. n. 113–114. Propodeum and part of thorax of 113, *E. pretiosa* (Timb.) and 114, *E. rhopoideus* sp. n.

Species incorrectly placed in *Euryrhopalus* Howard

Euryrhopalus diaphorocerus Masi 1917, *Novit. zool.* **24** : 148–9, figs. 19–20 = *Coccidoxenus diaphorocerus* (Masi), **comb. n.**

This species was described from a single female. The type is located in the British Museum (Natural History). A series of both sexes was received with the following data: MAURITIUS: Reduit, i.1950, *ex Saissetia hemispherica* Targ. (*J. R. Williams*). The species is hereby transferred to the genus *Coccidoxenus* Crawford: my colleague Mr. R. D. Eady concurs.

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ADDENDUM

A paper by Man Mohan (195.6 Taxonomy of Encyrtid parasites (Hymenoptera: Chalcidoidea) of Indian Coccoidea. *Acta hymenopt., Tokyo* **2**(2): 37–97) in which that author described a new species *Ericydnus ceroplastis*, was not received in London until April 1967. Dr Man Mohan kindly sent me the unique holotype on loan. It had been dissected, and the parts mounted on two slides. The species appears to me not to conform with *Ericydnus* but, from the form of the gaster, to belong in some genus of the subtribe Anagyrina.

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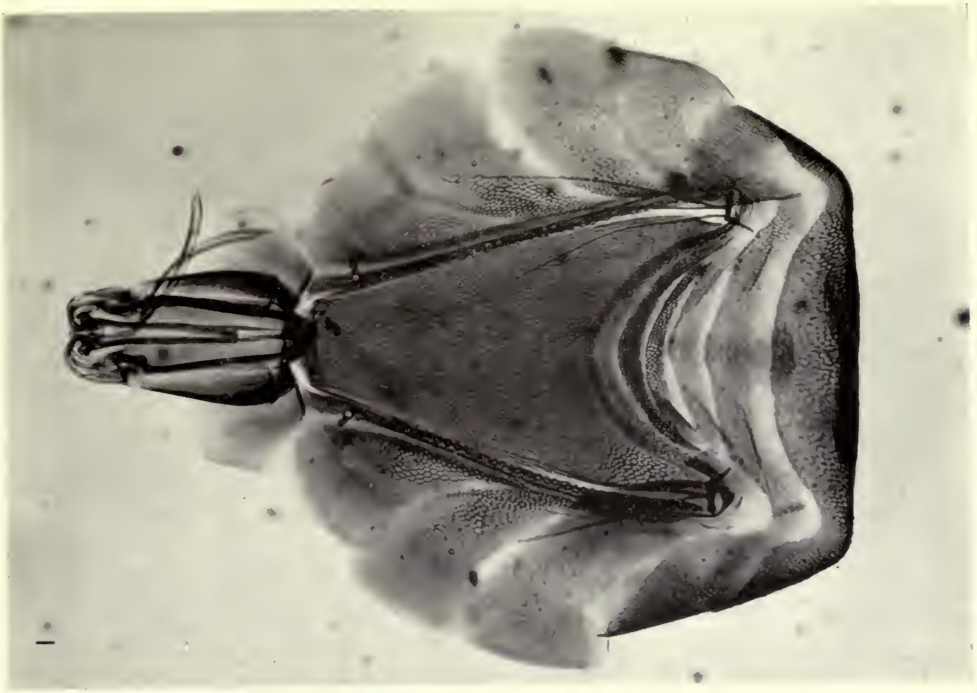
Preparation of female gaster of 1, *Anagyrus* sp. and 2, *Hungariella peregrina* (Comp.).
H. Compere phot.

PLATE 1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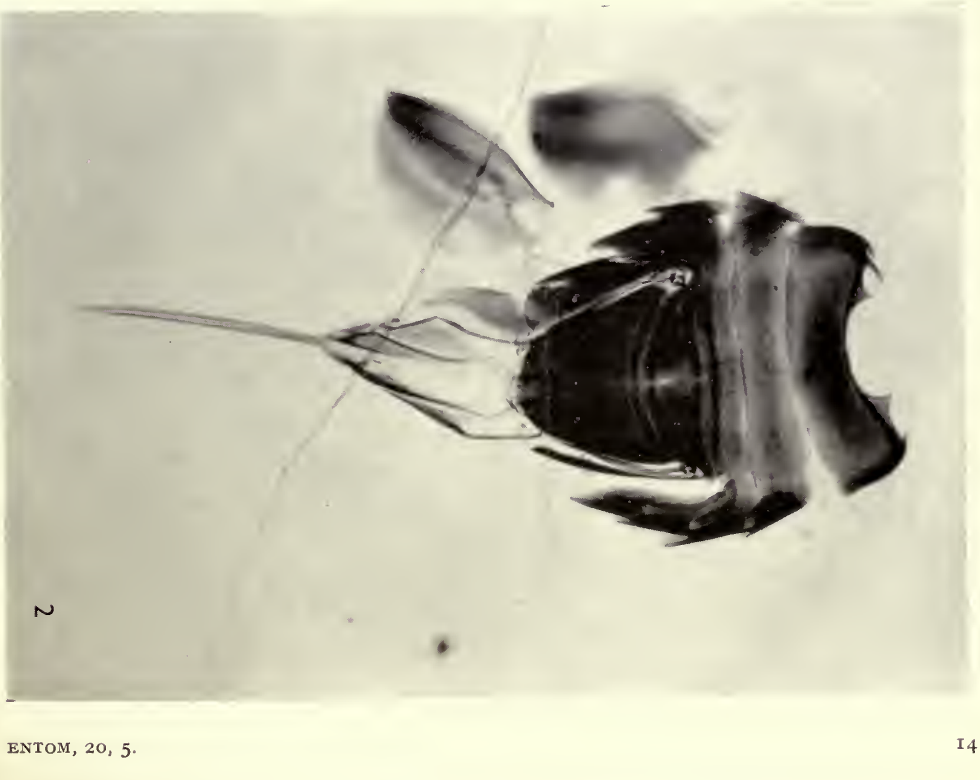
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PLATE 2

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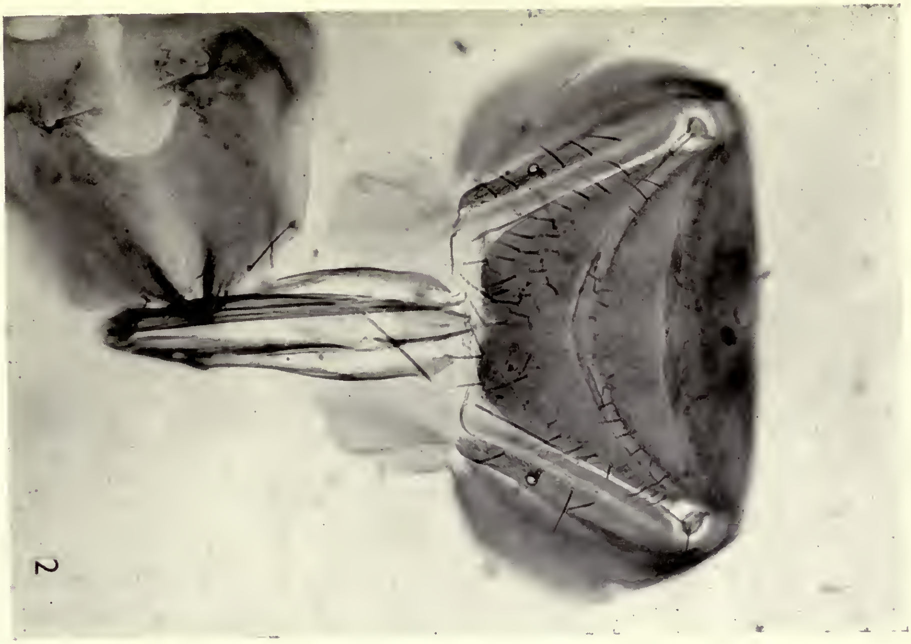

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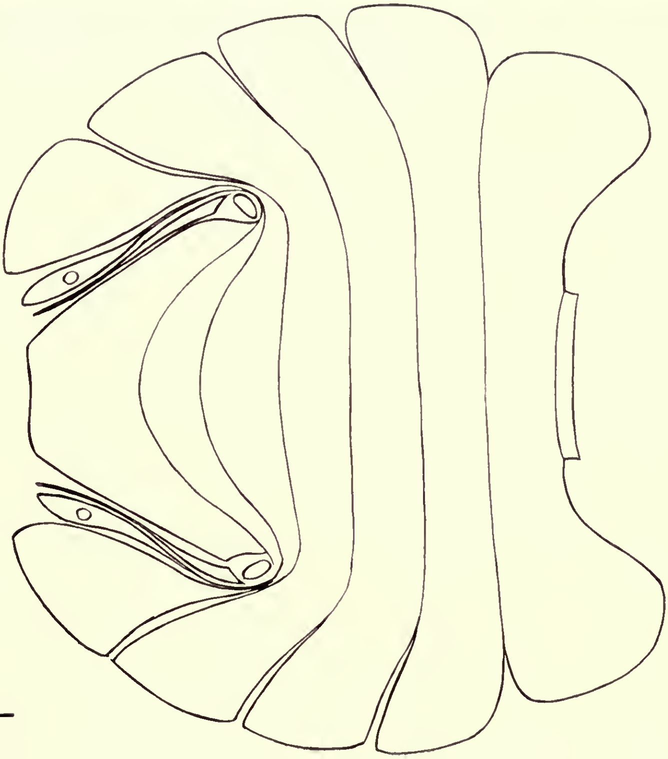

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PLATE 3

Hungariella piceae Erdös. G. Viggiani del.

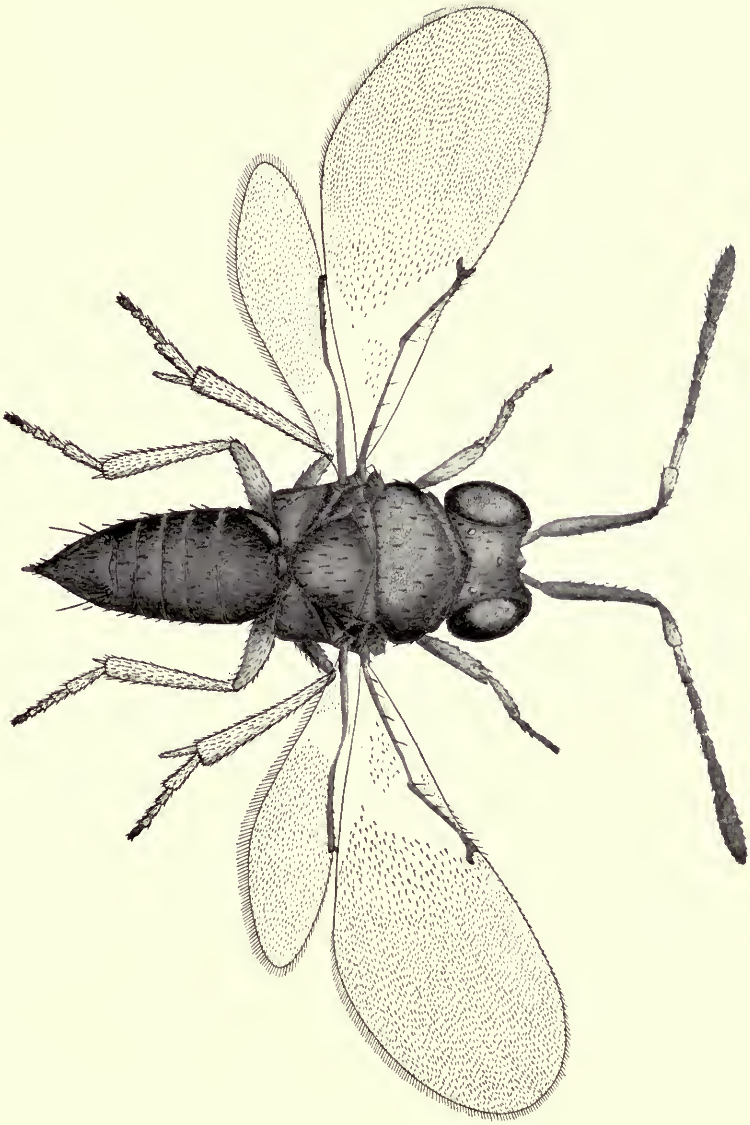
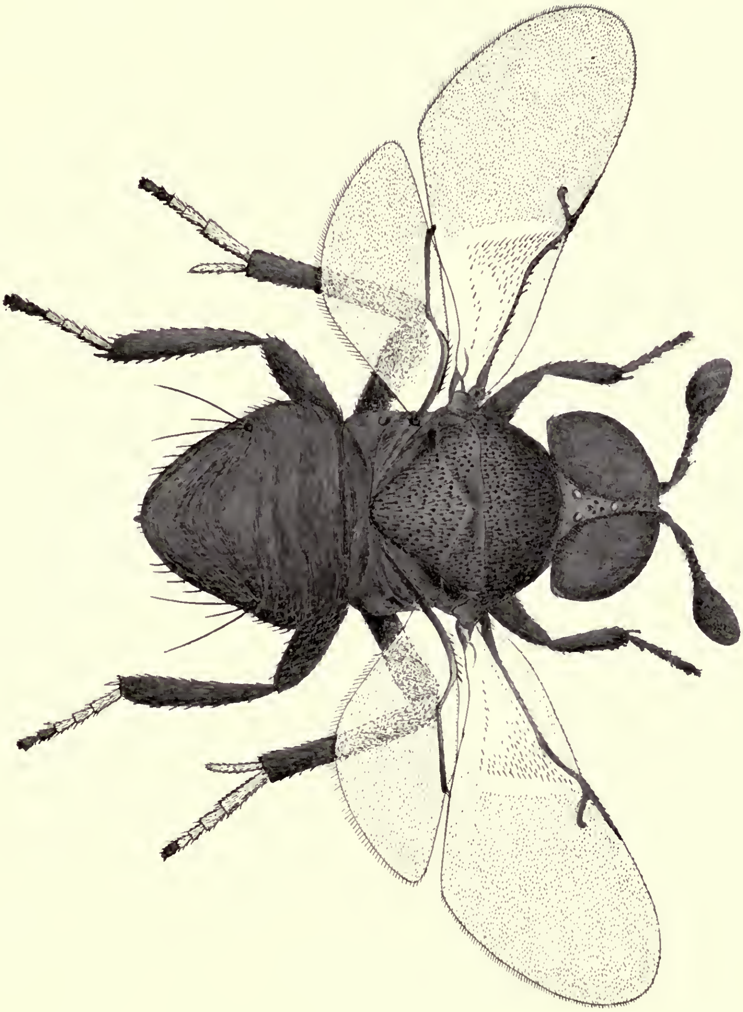


PLATE 4

Euryrhopalus kirkpatricki (Kerrich). G. Viggiani del.



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RHYPAROCHROMINAE TYPES IN THE BRITISH MUSEUM (NATURAL HISTORY) (HEMIPTERA : LYGAEIDAE)

G. G. E. SCUDDER

BULLETIN OF
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ENTOMOLOGY Vol. 20 No. 6
LONDON : 1967

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BY

G. G. E. SCUDDER

University of British Columbia, Vancouver, 8, B.C., Canada

Pp. 251–285

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TRUSTEES OF
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RHYPAROCHROMINAE TYPES IN THE BRITISH MUSEUM (NATURAL HISTORY) (HEMIPTERA : LYGAEIDAE)

By G. G. E. SCUDDER

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SYNOPSIS

This paper is concerned with the selection and designation of lectotypes for taxa belonging to the Lygaeid subfamily Rhyparochrominae. The material studied in the British Museum (Nat. Hist.) was described by Champion, Dallas, Distant, Douglas & Scott, Germar, Kirby, Kirkaldy, Rambur, Saunders, Scott, Uhler, Walker, White and Wollaston. The stabilization of taxa is necessary for future work on a monograph of the subfamily. Two neotypes are also selected, and some new synonymy and new combinations given.

INTRODUCTION

IN the entomological collections of the British Museum (Nat. Hist.) is to be found type material of species described by a number of early workers including G. C. Champion, W. S. Dallas, W. L. Distant, J. W. Douglas & J. Scott, E. F. Germar, W. F. Kirby, G. W. Kirkaldy, J. P. Rambur, E. Saunders, J. Scott, P. R. Uhler, F. Walker, F. B. White and T. V. Wollaston. These Hemipterists, like other entomologists of the time, when describing new species from more than one specimen, did not designate a single specimen as the 'Type' or if they did, they did not cite the specimen so that it conforms to the International Code of Zoological Nomenclature, 1964 edition, Article 73a or 73b, and so all material may be regarded as syntypic (Article 73c).

In the Museum collections, type labels have been added to many specimens, sometimes erroneously. This is unfortunate because it does not constitute a lectotype designation and can lead to much confusion in the taxon. In 1964–65, the material in the British Museum (Nat. Hist.) was studied by the author, and the opportunity taken to designate lectotypes where this was necessary. This was undertaken in connection with the preparation of a monograph on the subfamily.

In the selection of lectotypes, reference has been made to the original description, in order to confirm the description and locality listing. In the following list, arranged alphabetically under specific names, the original binomen is given, followed by a coded reference to the original description: the code is the same as that used by Slater (1964). Following the reference is listed the sex and status of the specimen, with new lectotype designations cited in CAPITALS. After this is given details of the label(s) borne by the specimen, each label being enclosed in quotation marks and the individual label(s) separated by a semicolon (;). The circular red B.M. type label referred to is the standard British Museum (Nat. Hist.) type label (as used in the Department of Entomology), a circular label with the word 'Type' encircled with a red ring. The circular green B.M. type label, on the Walker material, is similar to the red label, but is encircled with green instead of red. In order to save space, in referring to the specimens described in the Biologia Centrali-Americana by Distant (1880–93) I have not given the full data from each label, but only noted such labels as 'the B.C.A. label'. This is done because these labels merely give the name of the species and the B.C.A. information as follows for *Ozophora pallescens* (Distant)—'B.C.A., Hem. I Davila pallescens.': this information is available from the coded reference given in the text of this paper and the original binomen given for each species.

All lectotypes here designated have been labelled with a purple B.M. lectotype label. In addition, each lectotype has been labelled with a pink label which cites the original binomen, etc. as shown for *Metochus abbreviatus* Scott as follows—'METOCHUS ABBREVIATUS Scott 1874 LECTOTYPE G. G. E. Scudder 1965'. These lectotype labels are not listed in the paper. Holotype specimens in the collection also have been clearly labelled with pink labels containing comparable data.

Since Walker (1871–73) clearly indicated the number of specimens before him (by letters, *a*, *b*, *c*, etc.) it has been possible to recognize when only a single specimen was present in the original material. Thus, some of Walker's material, can unquestionably be labelled 'holotype': the sex of these as listed in the original description is not always correct. Dallas (1852) used a series of letters in his listing of material, but it is clear that the letters in this case indicate different localities and not number of specimens. Therefore, in all of the Dallas species, the number of specimens in the original series is indefinite and so lectotypes have been selected in all cases. Finally, for most of the Distant species, there is no indication of the number of specimens in the type series. Further, a search through the accessions in the Museum has turned up specimens which obviously could be regarded as type material, but there is no label on them to indicate this. Distant did label some specimens 'type', but this does not constitute a type designation since the information was not included in the original description and has not been published subsequently, as far as known. Where possible, lectotypes for the Distant species have been selected from the specimens bearing determination labels in Distant's handwriting; furthermore, the one labelled 'type' by Distant has been selected whenever possible.

Taxa in the British Museum (Nat. Hist.) collection, described by recent workers (China, Kiritshenko, Lindberg, Miller, Scudder, Southwood) are not considered in the main text of this paper, since holotype designations have been published. However, as recommended in the International Code (72D(4)), the list of additional species in the collections is given as an Appendix.

Finally, I have included in the paper the Distant types that are located in other Museums. This is done so that workers will have a complete listing of the location of the Distant material. Lectotype designations for the Distant material in the

Museo Civico di Storia Naturale, Genova have already been published (Scudder, 1966). The lectotype for *Pseudopamera aurivilliana* Distant is designated in this paper, the lectotype being in the Naturhistoriska Riksmuseum, Stockholm.

LIST OF SPECIES

***abbreviatus* (*Metochus*)** Scott, 1874*a*: 434. LECTOTYPE ♂ with labels: circular red B.M. type label; 'JAPAN'; 'Type. Scott Coll. 98—11.'; '———— abbreviatus, n sp.' Pinned through scutellum; left antenna, end two segments of right antenna, left fore and middle leg and all of right legs missing; first two segments of left antenna and right hind leg glued to card below specimen.

***acuminatus* (*Rhyparochromus*)** Dallas, 1852*a*: 567. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Ent. Club. 44—12.'; 'N. Holl.'; '184. RHYPAROCHROMUS ACUMINATUS,'. Glued to card; end segment of left antenna, end three segments of right antenna, middle and hind left tarsi and right middle leg missing. Present combination *Myocara acuminata* (Dallas).

***admistus* (*Caridops*)** Distant, 1909*c*: 333. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Maramaldus admistus Dist. type' [Distant's handwriting]; 'BHIM TAL 4500 FT. KUMAON N.A. 22–27–IX–06'; 'Distant Coll. 1911—383.' Micropinned through scutellum from below and mounted on card; abdomen missing. Present combination *Caridops admistus* (Distant).

***aeruginosus* (*Peritrechus*)** Distant, 1904*a*: 76. Lectotype in Genoa, designated by Scudder (1966). Paralectotype in collection ♀ with labels: circular red B.M. type label; 'aeruginosus Dist.' [Distant's handwriting]; 'Mandalay Birmania Fea IV 1885'; 'Distant Coll. 1911—383'. Present combination *Orieotrechus aeruginosus* (Distant).

***aethiopica* (*Exopamera*)** Distant, 1918*b*: 258. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Exopamera aethiopica Dist. type' [Distant's handwriting]; 'Brit. E. Afr. Kibwezi. 3000 ft. Apl. 2–4, 1911. S. A. Neave.'; '1911—177'. Pinned through scutellum; left fore and hind leg, end three segments of right antenna and right hind leg missing.

***aethiops* (*Calyptonotus*)** Douglas & Scott, 1868*b*: 28. Holotype ♀ with labels: circular red B.M. Type H.T. label; 'aethiops D & S.' [Saunders' handwriting]; 'Saunders Coll. Brit. Mus. 1910—357.' Micropinned through pronotum and mounted on card; left antenna with terminal three segments missing and all of right antenna missing. Present combination *Aphanus rolandri aethiops* (Douglas & Scott). **Comb. n.**

***aethiops* (*Cligenes*)** Distant, 1904*e*: 435. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Cligenes aethiops Dist.' [Distant's handwriting]; 'Hex River, C.G.H. 16th Aug. '02 1420'; 'Distant Coll. 1911—383'. Glued to card point; end segment of right antenna missing. Present combination *Botocudo aethiops* (Distant).

***affinis* (*Daerlac*)** Distant, 1901*b*: 1901. LECTOTYPE ♂ with labels: circular red B.M. type label; 'affinis Dist.' [Distant's handwriting]; 'Launceston 91—155'. Glued to card point: right hind leg and end segment of left antenna missing. Synonym of *Daerlac tricolor* Signoret, 1881. **Syn. n.**

***affinis* (*Trapezus*)** Distant, 1901*b*: 500. LECTOTYPE ♂ with labels: '88'; circular red B.M. type label; 'affinis Dist.' [Distant's handwriting]; '64'; 'Grand Etang (Windward side) 1900 ft. Grenada, W.I. H. H. Smith'; '95—206'. Glued to card point; end segment of both antennae missing. Present combination *Cryphula affinis* (Distant).

***africanus* (*Lethaeus*)** Dallas, 1852*a*: 557. Described from a. Sierra Leone (Pres. Rev. D. F. Morgan), b. S. Africa (Pres. Earl of Derby), c. S. Africa (Pres. Dr. A. Smith). The Sierra Leone specimen is not in the British Museum (Nat. Hist.); South African specimen in collection does not fit original description in essential detail and selection of this as lectotype would change present concept of *africanus*. A South African specimen in collection and with labels: 'S. Africa 43.19'; '1. LETHAEUS AFRICANUS' is identical with *Lethaeus tartareus* Stål. NEO-

TYPE ♀ selected with labels: 'SIERRA LEONE NJALA at light DATE 13.vi.25 E. Hargreaves'; 'BRIT. MUS 1925—280'; 'Lethaeus africanus Dall. W.E. CHINA. det.'; 'NEOTYPE LETHAEUS AFRICANUS Dallas 1852 det. Scudder 1966'.

***africanus* (*Maxaphanus*)** Distant, 1918*b*: 265. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Maxaphanus africanus Dist. type' [Distant's handwriting]; 'Mlanje, Nyasaland. 21.11.1912. S. A. Neave.'; '1913—140.' Pinned through scutellum; right antenna missing. Present combination *Dieuches africanus* (Distant).

***alacer* (*Thaumastopus* ?)** Walker, 1872*a*: 147. Holotype (sex unknown) with labels: circular green B.M. type label; 'Canary's'; 'Saunders. 65.13'; '2. THAUMASTOPUS ? ALACER.' Pinned through scutellum and mounted on polyporus strip; end two segments of left antenna, end segment of right antenna, left middle tarsus, left hind leg, right fore and hind legs, abdomen and wings missing. Synonym of *Noualhieria quadripunctata* (Brulle 1838).

***alacris* (*Thaumastopus* ?)** Walker, 1872*a*: 147. Holotype ♀ with labels: circular green B.M. type label; circular dark green label; '40 4 3 521'; '2. THAUMASTOPUS ? ALACRIS.' Pinned through pronotum; end two segments of right antenna, middle left tarsus, left hind leg missing. Synonym of *Cnemodus mavortius* (Say 1831).

***albicollis* (*Mirrhina*)** Distant, 1920*a*: 155. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Mirrhina albicollis Dist. type' [Distant's handwriting]; 'Houadou, New Caledonia. 26.x.1914. P. D. Montague. 1918—87'. Glued to card.

***albidomaculatus* (*Lachnophorus*)** Distant, 1913*a*: 1913. LECTOTYPE ♀ with labels: 'Mahe, '08–9. Seychelles Exp.'; circular red B.M. type label; 'Lachnophorus albidomaculata Dist. type' [Distant's handwriting]; 'Percy Sladen Expedition. 1911—497.' Glued to card; left antenna and hind leg missing; abdomen dissected and in vial. Present combination *Lachnesthus albidomaculatus* (Distant).

***albigera* (*Aphanus*)** Distant, 1918*b*: 264. LECTOTYPE ♀ with labels: 'Durham. F. Muir. 1902.'; circular red B.M. type label; 'Aphanus albigera Dist. type' [Distant's handwriting]; 'Sharp Coll. 1905—313.' Pinned through scutellum and mounted on cork; end segment of left antenna and right middle leg missing. Present combination *Rhyparochromus albigerus* (Distant).

***alboannulata* (*Pamera*)** Champion, 1913*a*: 6. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Pamera alboannulata Ch' [Champion's handwriting]; '♂'; 'Orosi, Costa Rica. ex C. Picado.'; 'Found in Bromeliads.'; '1913—83.' Glued to card point; right hind leg missing. Present combination *Lygofuscanellus alboannulatus* (Champion).

***albomaculata* (*Plociomera*)** Distant, 1893*a*: 400. Holotype ♀ with labels: circular red B.M type label; 'Plociomera albomaculata Dist.' [Distant's handwriting]; 'S. Geronimo, Guatemala. Champion.'; 'Sp. figured.' Glued to card: right fore leg missing. Present combination *Exptochiomera albomaculata* (Distant).

***albomaculatus* (*Calyptonotus*)** Scott, 1874*a*: 439. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Calyptonotus albomaculatus n. sp.'; 'JAPAN'; '21'; 'Pachymeris (Raglius) n. sp. see remarks in list'; 'Type Scott Coll. 88—11'. Pinned through scutellum; end of right antenna, right foreleg, left middle tarsus and left hind leg missing. Present combination *Graptopeltus albomaculatus* (Scott).

***albomarginatus* (*Gyndes*)** Scott, 1874*a*: 437. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Gyndes albomarginatus, n. sp.'. Glued to card. Present combination *Eucosmetus albomarginatus* (Scott).

***alienus* (*Rhyparochromus*)** Walker, 1872*a*: 105. Holotype ♀ with labels: circular green B.M. type label; 'SAR.'; 'Saunders. 63.13.'; '175. RHYPAROCHROMUS ALIENUS.' Pinned through scutellum and mounted on card; both antennae and left middle leg missing. Present combination *Neolethaeus alienus* (Walker). **Comb. n.**

***andrewsi* (*Pamera*)** Distant, 1901*b*: 481. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Andrewsi Dist.' [Distant's handwriting]; 'Flying-fish cove. VIII.97.'; 'Christmas I.

C. W. Andrews. 92—20.' Glued to card point; end segment of both antennae, left hind leg and right middle leg missing. Present combination *Remaudiereana andrewsi* (Distant).

***antennalis* (*Diniella*)** Distant, 1918*c*: 243. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Diniella antennalis Dist. type' [Distant's handwriting]; 'Tonkin. Hoabinh. Dec. 1916. R. V. de Salvaza.' Glued to card. Present combination *Lamproceps antennalis* (Distant).

***antennatus* (*Thebanus*)** Distant, 1918*a*: 197. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Thebanus antennatus Dist. type' [Distant's handwriting]; 'Nandidrig V.13 S. India. T.V.C.'; 'Thebanus politus Dist.?'; '401'; 'S. India. E. A. Butler. 1915–60.' Glued to card; right hind leg missing. Also in the collection are 1 ♂, 2 ♀ labelled 'S. India, T.V.C.'. Synonym of *Thebanus mysorensis* (Distant, 1918).

***antennatus* (*Tropistethus*)** Scott, 1874*a*: 429. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Tropistethus antennatus, n. sp.'; 'JAPAN'; 'Type. Scott Coll. 88—11.' Glued to card. Present combination *Lamproceps antennatus* (Scott).

***anticus* (*Rhyparochromus*)** Walker, 1872*a*: 100. LECTOTYPE ♀ with labels: circular green B.M. type label; 'E. Ind. 58 50'; '159. RHYPAROCHROMUS ANTICUS.' Pinned through scutellum and mounted on polyporus strip; left antenna, end three segments of right antenna, left middle leg, right fore and middle tibiae and tarsi, right hind tarsus missing. Synonym of *Dieuches femoralis* (Dohrn, 1860).

***apicalis* (*Pamera*)** Distant, 1904*c*: 268. LECTOTYPE ♂ with labels: circular red B.M. type label; 'apicalis Dist.' [Distant's handwriting]; 'Townsville, Qld. 11.10.02. F. P. Dodd'; '1903—356'. Glued to card, with another ♂ above. Present combination *Daerlac apicalis* (Distant).

***apicalis* (*Rhyparochromus*)** Dallas, 1852*a*: 562. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Int: S. Africa 43 19'; '126. RHYPAROCHROMUS APICALIS,'. Pinned through scutellum and mounted on polyporus strip; end two segments of left antenna, end three segments of right antenna, left fore and hind leg, and right hind leg missing. Present combination *Naphius apicalis* (Dallas).

***apicatus* (*Trapezus*)** Distant, 1882*a*: 217. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Trapezus apicatus Dist.' [Distant's handwriting]; 'S. Geronimo, Guatemala. Champion.'; and the B.C.A. label. Glued to card; end segment of left antenna missing. There are several additional specimens in the collection. Present combination *Cryphula apicata* (Distant).

***archetypus* (*Entisberus*)** Distant, 1903*d*: 74. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Entisberus archetypus Dist.' [Distant's handwriting]; 'Peradeniya, Ceylon, 11.1901'; 'Distant Coll. 1911—383.' Pinned through scutellum and mounted on polyporus strip; end segment of left antenna and tibia and tarsus of left hind leg missing.

***armatipes* (*Rhyparochromus*)** Walker, 1872*a*: 91. Holotype with labels: circular green B.M. type label; '512a'; '116. RHYPAROCHROMUS ARMATIPES.' Represented by head and prothorax only. Synonym of *Dieuches armipes* (Fabricius, 1794).

***assamensis* (*Lethaeus*)** (Distant, 1901*b*: 507. LECTOTYPE ♀ with labels: circular red B.M. type label; 'assamensis Dist.' [Distant's handwriting]; 'Naga Hills (Doherty)'; 'Distant Coll. 1911—383.' Pinned through scutellum; end segment of left antenna, end two segments of right antenna, left fore leg, left middle tarsus and left hind leg missing.

***assimilandus* (*Petissius*)** Distant, 1893*a*: 407. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Petissius assimilandus Dist.' [Distant's handwriting]; 'Bugaba, 800–1500 ft. Champion.'; 'Sp. figured'; and the B.C.A. label. Glued to card. There are other specimens in the collection in addition.

***assimilis* (*Rhyparochromus*)** Dallas, 1852*a*: 572. Type material not located in the collections. Present combination *Metochus assimilis* (Dallas).

***ater* (*Prytanes*)** Distant, 1893*a*: 402. Holotype ♀ with labels: circular red B.M. type label; 'Amula, Guerrero 6000 ft. Aug. H. H. Smith'; 'Sp. figured.'; 'Prytanes ater Dist.' [Distant's handwriting]. Glued to card; left antenna missing and abdomen dissected and mounted on slide.

***atomarius* (*Aphanus*)** Distant, 1904*d*: 353. LECTOTYPE ♂ with labels: circular red B.M. type label; 'atomarius Dist.' [Distant's handwriting]; 'Zoutpansberg. Transvaal. J. Junod. 1903—202.' Glued to card point; both antennae and both hind legs missing. In addition there are 2 ♂, 1 ♀ in the collection. Present combination *Rhyparothesus atomarius* (Distant). **Comb. n.**

***atratus* (*Locutius*)** Distant, 1918*a*: 192. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Locutius atratus Dist. type' [Distant's handwriting]; 'L26'; 'Chikkaballapura, S. India. T. V. Campbell.' Glued to card; left middle tibia and tarsus missing. Present combination *Plinthisus atratus* (Distant).

***attenuatus* (*Rhyparochromus*)** Dallas, 1852*a*: 579. LECTOTYPE ♀ with labels: circular red B.M. type label; '6 40 352 26'; '28. PLOCIOMERUS ATTENUATUS,' Pinned through scutellum and mounted on polyporus strip; both antennae, left fore and hind leg, and right middle and hind leg missing. Present combination *Paromius attenuatus* (Dallas).

***aurantiacus* (*Lethaeus*)** Distant, 1914*b*: 382. Type material apparently not in the collections. Present combination *Hebrolethaeus aurantiacus* (Distant).

***aurantiacus* (*Tropistethus*)** Distant, 1918*a*: 197. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Tropistethus aurantiacus Dist type' [Distant's handwriting]; 'Chikkaballapura. S. India. T.V.C.'; '3/2'; 'S. India. E. A. Butler. 1915–60.' Glued to card with a ♀ specimen to left; right fore leg and end segment of left antenna detached. Synonym of *Camptocera glaberrima* (Walker, 1872).

***aurifera* (*Potamiaena*)** Distant, 1910*a*: 61. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Potamiaena aurifera Dist. type' [Distant's handwriting]; 'Paresnath W. Bengal 4300–4400 ft. 15.IV.09'; 'Distant Coll. 1911—383.' Glued to card; end two segments of left antenna, end three segments of right antenna, and both hind legs missing; abdomen dissected.

***aurivilliana* (*Pseudopamera*)** Distant, 1882*a*: 209. LECTOTYPE ♂ with labels: 'Tehuantepic'; 'Type'; 'Typus'. Pinned through scutellum; right middle tibia and tarsus and both hind tarsi missing. In the Naturhistoriska Riksmuseum, Stockholm.

***australis* (*Aphanus*)** Distant, 1901*b*: 502. LECTOTYPE ♂ with labels: circular red B.M. type label; '5176'; 'australis Dist.' [Distant's handwriting]; 'Troughton Island. 92—1.' Glued to card. Present combination *Elasmolomus australis* (Distant).

***australis* (*Arrianoides*)** Distant, 1918*b*: 491. LECTOTYPE ♀ with labels: 'Townsville, Qld. 1902 F. P. Dodd.'; circular red B.M. type label; 'Arrianoides australis Dist. type' [Distant's handwriting]. Glued to card; end segment of right antenna missing and abdomen dissected. Present combination *Myocara australis* (Distant).

***australis* (*Bosbequius*)** Distant, 1918*b*: 260. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Bosbequius australis Dist. type' [Distant's handwriting]; 'Adelaide R., N.W. Australia, J. J. Walker'. Glued to card.

***balteatus* (*Phaeax*)** Distant, 1893*a*: 413. Lectotype ♂ with labels: circular red B.M. type label; 'Phaeax balteatus Dist.'; 'Bugaba, 800–1500 ft., Champion'; 'Sp. figured.'. Glued to card. Lectotype designated by Woodward (1962).

***basalis* (*Rhyparochromus*)** Dallas, 1852*a*: 575. LECTOTYPE ♀ with labels: circular red B.M. type label; 'North Amer E.D.'; '99. RHYPAROCHROMUS BASALIS,'. Glued to card with ♂ to right. Present combination *Pachybrachius basalis* (Dallas).

***bengalensis* (*Aphanus*)** Distant, 1909*c*: 337. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Aphanus bengalensis Dist. type' [Distant's handwriting]; 'Pusa Bengal'; 'Distant Coll. 1911—383.' Pinned through scutellum and mounted on card; end segment of left antenna, left middle and hind leg missing. Present combination *Rhyparothesus bengalensis* (Distant). **Comb. n.**

***bengalensis* (*Diniella*)** Distant, 1909*c*: 334. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Diniella bengalensis Dist. type' [Distant's handwriting]; 'Pusa Bengal'. Pinned through right clavus and mounted on polyporus strip.

***bengalensis* (*Rhyparochromus*)** Dallas, 1852*a*: 572. LECTOTYPE ♂ with labels: circular red B.M. type label; 'N. Bengal 42. 25.'; '151. RHYPAROCHROMUS BENGALENSIS'. Pinned through scutellum; left antenna, end three segments of right antenna, right fore tibia and tarsus, and right hind leg missing. Present combination *Metochus bengalensis* (Dallas).

***bicolor* (*Drymus*)** Distant, 1901*b*: 508. LECTOTYPE ♂ with labels: circular red B.M. type label; 'bicolor Dist.' [Distant's handwriting]; 'Mungphu'; 'Atkinson Coll. 92–6.' Glued to card point; end two segments of left antenna and right middle leg missing. There is also a ♀ in the collection.

***bicolor* (*Nabis*)** Walker, 1873*a*: 145. Holotype ♂ with labels: circular green B.M. type label; '39. NABIS BICOLOR.'; 'Nabis bicolor. Walker's Catal.' Glued to card; left antenna missing. Synonym of *Paromius piratoides* (Costa, 1864).

***biplagiatus* (*Noliphus* ?)** Walker, 1871*a*: 177. Holotype ♀ with labels: circular green B.M. type label; 'Gil.'; 'Saunders. 65.13.'; '7. NOLIPHUS ? BIPLAGIATUS.' Pinned through pronotum and mounted on polyporus strip; end segment of left antenna, end three segments of right antenna, left and right hind legs missing. Present combination *Narbo biplagiatus* (Walker).

***bipunctatus* (*Ligyrocoris*)** Kirby, 1890*a*: 547. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Fern Na'; 'Ligyrocoris bipunctata Kb' [Kirby's handwriting]. Glued to card point; end segment of both antennae, left middle and hind leg, right hind tibia and tarsus missing. Synonym of *Pachybrachius vinctus* (Say, 1831).

***borealis* (*Rhyparochromus*)** Dallas, 1852*a*: 565. LECTOTYPE ♀ with labels: 'Hudson's Bay 44.17'; 'Rhyparochromus ferus. Walker's Catal.' Pinned through thorax; end two segments of left antenna and end segment of right antenna, left middle leg missing. Also in collection are ♀ with labels: 'R'; '760'; '97. RHYPAROCHROMUS FERUS.'. and 1 ex. with labels: 'R'; '761'; 'Rhyparochromus ferus. Walker's Catal.' Synonym of *Eremocoris ferus* (Say, 1831).

***brevipennis* (*Budaeus*)** Distant, 1904*a*: 76. LECTOTYPE a nymph with labels: circular red B.M. type label; 'Budaeus brevipennis Dist.' [Distant's handwriting]; 'Lohardaga'; 'Atkinson Coll. 92–6.' Glued to card point; antennae except for basal segments, and left fore leg missing. A synonym of *Pachybrachius pallicornis* (Dallas 1852).

***brevis* (*Scolopostethus*)** Saunders, 1867*a*: 221. Not located.

***brunneus* (*Locutius*)** Distant, 1918*a*: 193. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Locutius brunneus Dist. type' [Distant's handwriting]; 'Chikkaballapura, S. India. T. V. Campbell'; 'L31'; 'S. India. E. A. Butler. 1915–60.' Glued to card; end segment of left antenna, right antenna, left middle leg and all three right legs missing. Present combination *Plinthisus brunneus* (Distant).

***brunneus* (*Prosomoeus*)** Scott, 1874*a*: 436. LECTOTYPE ♂ with labels: circular red B.M. type label; '24'; 'JAPAN'; 'Prosomoeus nov. gen. ———— brunneus, n. sp.' Pinned through scutellum and mounted on polyporus strip; right antenna, left and right hind legs missing.

***burmanicus* (*Usilanus*)** Distant, 1909*c*: 341. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Usilanus burmanicus Dist. type' [Distant's handwriting]; 'Carin Asciuii Ghecu 1400–1500m. L. Fea. III–IV.88.'; 'Distant Coll. 1911—383.' Pinned through right hemielytron and mounted on card; right antenna missing.

***caeca* (*Plociomera*)** Distant, 1882*a*: 210. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Quiche Mts., 7–9,000 ft. Champion.'; and the B.C.A. label. Glued to card with a ♀ to right. Present combination *Exptochiomera caeca* (Distant).

***caliginosus* (*Trapezonotus*)** Distant, 1882*a*: 216. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Trapezonotus caliginosus' [Distant's handwriting]; 'Quezaltenango, 7800 ft.

Champion.'; and the B.C.A. label. Glued to card with a ♀ to left; both fore legs and right middle leg missing.

capensis (Aphanus) Dallas, 1852*a*: 559. LECTOTYPE ♀ with labels: circular red B.M. type label; '12. APHANUS CAPENSIS,'. Glued to card; end two segments of left antenna, end segment of right antenna, and all legs on right side missing; abdomen dissected. Present combination *Sinierus capensis* (Dallas).

capitatus (Vertomannus) Distant, 1903*c*: 46. LECTOTYPE ♂ with labels: circular red B.M. type label; 'capitatus Dist.' [Distant's handwriting]; 'Carin Asciuii Ghecu 1400–1500 m. L. Fea. III–IV.88.'; 'Distant Coll. 1911—383.' Glued to card.

carbonarius (Pachymerus) Rambur, 1839*a*: 148. LECTOTYPE ♀ with label: 'Pachymerus carbonarius'. Pinned through scutellum; left hind leg missing. Present combination *Microtomideus carbonarius* (Rambur).

cardui (Dieuches) Distant, 1913*a*: 155. LECTOTYPE ♂ with labels: '204'; 'Mahe, '08–9. Seychelles Exp.'; circular red B.M. type label; 'Dieuches cardui Dist. type' [Distant's handwriting]; 'Percy Sladen Trust Expedition. 1911—497.' Glued to card: both fore legs and right hind leg missing; right hemielytron detached and glued to card beside lectotype.

castaneus (Bubaces) Distant, 1893*a*: 409. Holotype ♀ with labels: circular red B.M. type label; 'Bubaces castaneus Dist.' [Distant's handwriting]; 'Sp. figured.'; 'Temax, N. Yucatan, Gaumer'. Glued to card; end segment of both antennae and all legs except fore legs (less tarsi), missing; abdomen dissected.

cephalotes (Rhyparochromus) Dallas, 1852*a*: 577. LECTOTYPE ♂ with labels: circular red B.M. type label; 'New Holl. 44 4'; '188. RHYPAROCHROMUS CEPHALOTES'. Glued to card; end three segments of both antennae missing. In addition in the collection are 2 ♀ with labels: '44 40 V.D.L.'; 'Rhyparochromus cephalotes. Walker's Catal.' Present combination *Daerlac cephalotes* (Dallas).

ceromatica (Mahisa) Distant, 1906*a*: 413. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Mahisa ceromatica Dist. type' [Distant's handwriting]; 'Wellawaya. Ceylon, XI–05.'; 'Distant Coll. 1911—383.' Pinned through scutellum and mounted on polyporus strip; right antenna and right hind leg missing; abdomen dissected.

championi (Acolhua) Distant, 1893*a*: 394. Holotype with labels: circular red B.M. type label; 'Acolhua championi Dist.' [Distant's handwriting]; 'Sp. figured.'; 'Zapote, Guatemala, G. C. Champion.' Glued to card; abdomen missing.

chinensis (Rhyparochromus) Dallas, 1852*a*: 566. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Hong Kong 48 : 60'; '149. RHYPAROCHROMUS CHINENSIS,'. Micropinned through right clavus and mounted on polyporus strip; end two segments of right antenna, left hind leg missing; abdomen detached and in gelatine capsule. Present combination *Dieuches chinensis* (Dallas).

cincticornis (Ophthalmicus) Walker, 1872*a*: 138. Holotype ♀ with labels: circular green B.M. type label; '32. OPHTHALMICUS CINCTICORNIS'. Glued to card; underside of card with number '67.25'. Present combination *Appolonius cincticornis* (Walker).

cincticornis (Rhyparochromus) Walker, 1872*a*: 108. LECTOTYPE ♂ with labels: circular green B.M. type label; 'Batchian (Molucc.)'; 'Saunders 65.13'; '181. RHYPAROCHROMUS CINCTICORNIS'. Glued to card with a ♀; last segment of antennae missing. Present combination *Pachybrachius cincticornis* (Walker).

cingalensis (Sinierus) Distant, 1904*a*: 65. LECTOTYPE ♀ with labels: circular red B.M. type label; 'cingalensis Dist.' [Distant's handwriting]; 'Peradeniya, Ceylon. 11—1901'; 'Distant Coll. 1911—383.' Pinned through pronotum from below and mounted on card; end segment of both antennae missing. Synonym of *Sinierus brevis* (Motshulsky, 1863).

circumcinctus (Rhyparochromus) Walker, 1872*a*: 97. LECTOTYPE a nymph with labels: circular green B.M. type label; '147. RHYPAROCHROMUS CIRCUMCINCTUS'. Glued to card; underside of card with 'Wright, Seychelles'; left antenna and left middle leg missing. Present combination *Pachybrachius circumcinctus* (Walker).

***clavatus* (*Aphanus*)** Dallas, 1852*a*: 560. Specimens not traced in the collection. Synonym of *Ptochiomera nodosa* Say, 1831.

***clypeatus* (*Gonatas*)** Distant, 1904*a*: 90. Lectotype in Genoa, designated by Scudder (1966). Paralectotype in collection ♂ with labels: circular red B.M. type label; 'clypeatus Dist.' [Distant's handwriting]; 'Birmania Shwego Myo Fea X 1885'; 'Distant Coll. 1911—383.' Glued to card; end segment of left antenna and right middle leg missing. Present combination *Kanigara clypeata* (Distant).

***coleopteroides* (*Rhyparochromus*)** Walker, 1872*a*: 108. LECTOTYPE ♀ with labels: circular green B.M. type label; 'Cer E'; 'Saunders 65.15.'; '180. RHYPAROCHROMUS COLEOPTEROIDES.' Glued to card; right hind leg missing. Present combination *Telocoris coleopteroides* (Walker). **Comb. n.**

***collaris* (*Rhyparochromus*)** Walker, 1872*a*: 111. LECTOTYPE ♀ with labels: 'Adelaide 59 52'; '195. RHYPAROCHROMUS COLLARIS'. Pinned through right hemielytron and mounted on polyporus strip; left hind tarsus, right middle tarsus and right hind leg missing. Present combination *Fontejus collaris* (Walker).

As noted by Distant (1901) and Gross (1962) there is no specimen labelled 'type' in the collections. In the original description, Walker (1872) lists material from Adelaide and Tasmania, and a Var B. with fore wings ferruginous from Australia. Only the latter specimen is present in the collections and since it is the only syntype remaining, it can be selected as lectotype as has been done above. By so doing, *Fontejus collaris* Stål, 1874 becomes a synonym of *Fontejus collaris* (Dallas).

***collina* (*Rhaptus*)** Distant, 1893*a*: 410. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Rhaptus collina Dist.' [Distant's handwriting]; 'Quiche Mts., 7–9,000 ft. Champion.'; and the B.C.A. label. Glued to card to left of an additional ♀ specimen; left middle leg missing. Present combination *Xestocoris collinus* (Distant).

***coloratus* (*Abanus*)** Distant, 1909*b*: 493. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Abanus coloratus Dist. type' [Distant's handwriting]; 'CHAPRA BENGAL MACKENZIE'; 'Distant Coll. 1911—383.' Pinned through pronotum and mounted on polyporus strip; left hind leg missing. Present combination *Dieuches coloratus* (Distant).

***concavus* (*Davila*)** Distant, 1893*a*: 395. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Bugaba, Panama. Champion.'; 'Sp. figured.'; and the B.C.A. label. Glued to card, with an additional ♀ to left; end two segments of left antenna missing. Present combination *Ozophora concava* (Distant).

This species was described from Mexico: Orizaba, Atoyae in Vera Cruz, Teapa in Tabasco; Guatemala: El Tumbador, Cerro Zunil, Zapote, Teleman; Panama: Bugaba, Caldera, Volcan de Chiriqui. Within the syntypic series there at least four distinct species. Only specimens from Orizaba, Atoyae, Teapa, Teleman and Bugaba are true *concava*. *O. concava* is a large species with clavus dark brown and with a pale streak; the hemielytra are hirsute.

***concinnulus* (*Rhyparochromus*)** Walker, 1872*a*: 93. LECTOTYPE ♀ with labels: circular green B.M. type label; 'Rhyp. concinnulus 5 Mad'; '121. RHYPAROCHROMUS CONCINNULUS.' Glued to card; end segment of right antenna missing.

As noted by Slater (1964) the type specimen is identical with *Tropistethus seminitens* Puton, 1889, but the description is of *Raglius alboacuminatus* (Goeze, 1778).

***consanguineus* (*Davila*)** Distant, 1893*a*: 395. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Davila consanguineus Dist.' [Distant's handwriting]; 'Cerro Zunil, 4000 ft. Champion.'; 'Sp. figured.'; and the B.C.A. label. Glued to card with an additional ♂ to right; end segment of left antenna missing. Present combination *Ozophora consanguinea* (Distant).

***consanguineus* (*Dieuches*)** Distant, 1904*c*: 268. LECTOTYPE ♂ with labels: 'Townsville, Qld. 16.1.03. F. P. Dodd'; circular red B.M. type label; 'consanguineus Dist.' [Distant's handwriting]; '1903—322.' Glued to card with an additional ♂ above.

***consimilis* (*Dieuches*)** Distant, 1918*b*: 266. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Dieuches consimilis Dist. type' [Distant's handwriting]; 'Entebbe, Uganda. 14.8.11. C. C. Gowdey. 1912—101.' Glued to card point; end segment of left antenna, end three segments of right antenna and hind tarsi missing.

***consocialis* (*Aphanus*)** Distant, 1913*a*: 154. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Aphanus consocialis Dist. type' [Distant's handwriting]; 'Mahe, '08–9. Seychelles Exp.'; 'Percy Sladen Trust Expedition. 1911—497.' Glued to card; end segment of left antenna, right middle leg missing; card has the number '107' Present combination *Elasmolomus consocialis* (Distant). **Comb. n.**

***consuta* (*Orthaea*)** Dallas, 1852*a*: 580. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Pudognolugua'?; 'Columbia 46 20'; '1. ORTHAEA CONSUTA,'. Micropinned through pronotum and mounted on polyporus strip; end segment of right antenna, right middle and hind leg missing. Present combination *Pachybrachius consutus* (Dallas).

***contractus* (*Sisamnes*)** Distant, 1893*a*: 402. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Sisamnes contractus Dist.' [Distant's handwriting]; 'Duenas, Guatemala, G. C. Champion.'; 'Sp. figured'. Glued to card.

***convelatus* (*Rhyparochromus*)** Distant, 1901*b*: 485. LECTOTYPE ♀ with labels: circular red B.M. type label; 'convelatus Dist.' [Distant's handwriting]; 'Bombay'; 'Distant Coll. 1911—383.' Glued to card; right antenna missing. Synonym of *Lachnesthus singalensis* (Dohrn, 1860).

***costaricensis* (*Gonatas*)** Distant, 1903*g*: 526. LECTOTYPE ♀ with labels: circular red B.M. type label; 'costaricensis Dist.' [Distant's handwriting]; 'Costa Rica (Beverly)'; 'Distant Coll. 1911—383.' Glued to card. Present combination *Paragonatas costaricensis* (Distant).

***crassa* (*Agunga*)** Distant, 1906*a*: 413. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Agunga crassa Dist. type' [Distant's handwriting]; 'Peradeniya. Ceylon 1–05'; 'Distant Coll. 1911—383.' Covered with fungal hyphae, micropinned from below through scutellum and mounted on card; end segment of both antennae missing. Present combination *Appolonius crassus* (Distant).

***crassicornis* (*Rhyparochromus*)** Dallas, 1852*a*: 571. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Rhyparochrom. crassicornis, Dallas. (Type)'; '40 4 3 489'; circular green label; 'Type'; 'crassicornis'. Pinned through metathorax and mounted on polyporus strip; end three segments of left antenna and end segment of right antenna missing. Synonym of *Peritrechus angusticollis* (Sahlberg, 1848).

***cuneata* (*Pamerana*)** Distant, 1909*c*: 332. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Pamerana cuneata Dist. type' [Distant's handwriting]; 'Calcutta 18–VIII–08 N.A.'; 'Distant Coll. 1911—383.' Pinned through scutellum and mounted on card; end segment of right antenna, and right fore wing missing; abdomen dissected. Synonym of *Pamerana nigritula* (Walker, 1872).

***cupreus* (*Adauctus*)** Distant, 1909*b*: 492. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Adauctus cupreus Dist. type' [Distant's handwriting]; 'Pusa Bengal 189'; 'Distant Coll. 1911—383.' Micropinned through scutellum and mounted on polyporus strip; last three segments of left antenna and end segment of right antenna, left hind leg missing.

***dallasi* (*Lethaeus*)** Scott, 1874*a*: 438. LECTOTYPE ♂ with labels: circular red B.M. type label; 'JAPAN'; 'Type. Scott Coll. 88—11.'; 'Lethaeus Dallasi, n. sp.' Pinned through scutellum and mounted on polyporus strip; end two segments of both antennae and right hind leg missing. Present combination *Neolethaeus dallasi* (Scott). **Comb. n.**

***dallasi* (*Pamera*)** Distant, 1882*a*: 208. New name for *Rhyparochromus lineatus* Dallas 1852 *nec* Fabricius. Synonym of *Pachybracius bilobatus* (Say, 1831).

***delineata* (*Salacia* ?)** Distant, 1893*a*: 406. Holotype ♀ with labels: circular red B.M. type label; 'Salacia ? delineata Dist.' [Distant's handwriting]; Pena Blanca, 3,000–4,000 ft.

Champion.'; 'Sp. figured.'; and the B.C.A. label. Glued to card; end segment of right antenna missing. Present combination *Botocudo delineatus* (Distant).

***delineatus* (*Pachymerus*)** Rambur, 1839*a*: 151. LECTOTYPE with labels: 'Grenada'; a green square label; 'P. delineatus Ramb.' Pinned through scutellum and mounted on polyporus strip; abdomen missing. Present combination *Ragliodes delineatus* (Rambur).

***delineatus* (*Rhyparochromus*)** Walker, 1872*a*: 103. LECTOTYPE ♀ with labels: circular green B.M. type label; 'Cer.'; 'Saunders. 65.13.'; '169. RHYPAROCHROMUS DELINEATUS.' Pinned through metathorax from below and mounted on card point; head and all legs except right hind leg missing; abdomen and pronotum detached and glued back to specimen. Synonym of *Pachybrachius pallicornis* (Dallas, 1852).

***delitus* (*Ligyrocoris*)** Distant, 1882*a*: 201. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Ligyrocoris delitus Dist.' [Distant's handwriting]; 'Guatemala City. Champion.' Glued to card; end three segments of right antenna and both hind legs missing.

***denotatus* (*Usilanus*)** Distant, 1909*c*: 342. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Usilanus denotatus Dist. type' [Distant's handwriting]; 'Bhamo Birmania Fea VIII 1880'; 'Distant Coll. 1911—383.' Glued to card; both antennae and both middle and hind legs missing.

***descriptus* (*Rhyparochromus*)** Walker, 1872*a*: 103. LECTOTYPE ♀ with labels: circular green B.M. type label; 'Sul'; '170. RHYPAROCHROMUS DESCRIPTUS.' Pinned through scutellum and mounted on card; left antenna, end segment of right antenna, left middle leg, right fore leg, right middle tibia and tarsus, right hind tarsus missing. Present combination *Neolethaeus descriptus* (Walker). **Comb. n.**

***diffinis* (*Rhyparochromus*)** Walker, 1872*a*: 110. LECTOTYPE ♀ with labels: circular green B.M. type label; 'Moreton Bay 57 130'; '193. RHYPAROCHROMUS DIFFINUS'. Pinned through scutellum and mounted on polyporus strip; left and right fore tarsi, left middle and hind legs, right middle tarsus and right hind leg missing; terminal segment of both antennae missing; abdomen dissected. There is also a ♂ in collection with the same locality data. Present combination *Aristaenetus diffinis* (Walker).

***dimidiatus* (*Rhyparochromus*)** Walker, 1872*a*: 107. Holotype ♀ with labels: circular green B.M. type label; 'Dor.'; 'Dorey Wallace'; 'Saunders. 65.13.'; '179. RHYPAROCHROMUS DIMIDIATUS.' Glued to card; left middle tarsus missing. Synonym of *Mizaldus woodwardi* Slater & Carayon, 1963, a new name for *Rhyparochromus dimidiatus* Walker, which is preoccupied.

***discifer* (*Nabis*)** Walker, 1870*a*: 2380. Type material not located. Synonym of *Paromius gracilis* (Rambur, 1839).

***discoguttatus* (*Aphanus*)** Distant, 1918*a*: 199. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Aphanus discoguttatus Dist. type' [Distant's handwriting]; 'Kodai Kanal S. India. Campbell.'; '64'; 'S. India. E. A. Butler. 1915–60.' Glued to card; underside of card with data 'K.K. 4.14 64'. Present combination *Dieuches discoguttatus* (Distant).

***dispar* (*Ophthalmicus*)** Walker, 1872*a*: 139. Holotype ♂ with labels: circular green B.M. type label; 'Thwaites. 67.25'; '33. OPHTHALMICUS DISPAR.' Glued to card; end segment of left antenna missing; right antenna oligomerous. Synonym of *Rhodiginus ceylonicus* (Lethierry & Severin, 1894) which is a new name for *Ophthalmicus dispar* Walker, 1872, the latter being preoccupied.

***dispositus* (*Perigenes*)** Distant, 1893*a*: 396. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Perigenes dispositus Dist.' [Distant's handwriting]; 'Chiacaman, Vera Paz. Champion.'; 'Sp. figured.'; and the B.C.A. label. Glued to card, to right of an additional ♀.

***dissimilis* (*Dieuches*)** Distant, 1883*a*: 438. LECTOTYPE ♀ with labels: circular red B.M. type label; 'dissimilis Dist.' [Distant's handwriting]; 'Japan (Lewis)'; 'Distant Coll. 1911—383.' Glued to card. Present combination *Paradieuches dissimilis* (Distant).

***dissimilis* (*Lygaeus*)** Walker, 1872*a*: 61. Holotype ♀ (not ♂) with labels: circular green B.M. type label; 'N.G.?'; 'SAR.'; 'Saunders. 65.13.'; '128. LYGAEUS DISSIMILIS.' Pinned through scutellum; end segment of both antennae, middle left leg and both hind tarsi missing; abdomen dissected. Present combination *Dyakana dissimilis* (Walker).

***distinctus* (*Cligenes*)** Distant, 1893*a*: 405. Holotype ♀ with labels: circular red B.M. type label; 'Caldera, Panama. Champion.'; 'Sp. figured.'; the B.C.A. label; 'Cligenes distinctus Dist.' [Distant's handwriting]. Glued to card; end two segments of both antennae missing.

***distinctus* (*Noliphus*?)** Walker, 1871*a*: 176. Holotype ♀ with labels: circular green B.M. type label; 'SAR.'; 'N.G.?'; '6. NOLIPHUS? DISTINCTUS.'; 'Saunders. 65.13.' Pinned through scutellum; end three segments of left antenna, end segment of right antenna, right and left middle legs missing. Synonym of *Narbo longipes* Stål, 1867.

***distinctus* (*Petizius*)** Distant, 1901*b*: 501. LECTOTYPE ♀ with labels: circular red B.M. type label; 'distinctus Dist.' [Distant's handwriting]; 'Balthazar (Windward side) Grenada, W.I. H. H. Smith. 42.' Glued to card; right antenna oligomerous. There are about 22 additional specimens in the collection from the same locality. Present combination *Valtissius distinctus* (Distant).

***divergens* (*Gonatas*)** Distant, 1882*a*: 219. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Gonatas divergens Dist.' [Distant's handwriting]; 'S. Geronimo, Guatemala. Champion.'; and the B.C.A. label. Glued to card, to left of a ♀. Present combination *Paragonatas divergens* (Distant).

***diversus* (*Petissius*?)** Distant, 1893*a*: 407. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Petissius? diversus Dist.' [Distant's handwriting]; 'David, Panama. Champion.'; the B.C.A. label; 'Sp. figured.' Glued to card; end segment of left antenna and abdomen missing. Present combination *Valtissius diversus* (Distant).

***dominica* (*Margareta*)** White, 1878*a*: 75. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Margareta dominica B.W.' [White's handwriting]; 'New Zealand'; 'Pres. by Perth Museum. B.M. 1953—629.'; '25. Margareta dominica BW.' Glued to card; right antenna, left hind tibia and tarsus missing.

***douglasi* (*Plociomerus*)** White, 1876*a*: 105. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Plociomerus douglasi B.W. TYPE'; 'New Zealand'; 'Pres. by Perth Museum. B.M. 1953—629.'; '20. Plociomerus Douglasi, Buch. White.' Glued to card, with an additional 3 ♂ to left; end three segments of both antennae and left hind leg missing. Synonym of *Remaudiereana nigriceps* (Dallas, 1852).

***dubius* (*Pachymerus*)** Rambur, 1839*a*: 152. LECTOTYPE ♀ with label: 'Pachymerus dubius' on green paper. Pinned through scutellum; end segment of right antenna, end three segments of left antenna, right middle and hind legs, left fore leg, left middle tarsus and left hind leg missing. Synonym of *Stygnocoris sabulosus* (Schilling, 1829).

***dudgeoni* (*Aphanus*)** Distant, 1909*c*: 336. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Aphanus dudgeoni Dist. type' [Distant's handwriting]; 'Kangra Valley 4500 ft. June 1899 Dudgeon.'; 'Distant Coll. 1911—383.' Pinned through scutellum and mounted on card; end two segments of left antenna missing. Present combination *Rhyparothesus dudgeoni* (Distant). **Comb. n.**

***ejuncida* (*Pamera*)** Distant, 1883*a*: 433. LECTOTYPE ♀ with labels: circular red B.M. type label; 'ejuncida Dist.' [Distant's handwriting]; 'Japan (Lewis)'; 'Distant Coll. 1911—383.' Glued to card. Synonym of *Paromius pallidus* (Montrouzier, 1865).

***electa* (*Targarema*)** White, 1878*a*: 74. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Targarema electa B.W.'; 'New Zealand Broun'; 'Pres. by Perth Museum. B.M. 1953—629.' Glued to card; end two segments of both antennae and left hind tibia and tarsus missing. Card has data '17.3 N.Z. Broun'.

***elegans* (*Nabis*)** Walker, 1873*a*: 144. Holotype ♂ with labels: circular green B.M. type label; 'Nabis elegans. Walker's Catal.'; '31. NABIS ELEGANS.'; 'PETROPOLIS Feby. 1857. J. Gray 5757'. Glued to card. Present combination *Heraeus elegans* (Walker).

***emersoni* (*Pamera*)** Distant, 1909*b*: 491. Said to be in the Vienna Museum, but not located. Synonym of *Pachybrachius nietneri* (Dohrn, 1860).

erosus **(*Aphanus*)** Distant, 1901*b*: 503. LECTOTYPE ♂ with labels: circular red B.M. type label; 'erosus Dist.' [Distant's handwriting]; 'E. Africa, 92—23.' Pinned through scutellum and attached to card; both antennae, left fore leg, right middle leg and left corium and membrane missing. Present combination *Naphius erosus* (Distant).

erosus **(*Rhyparochromus*)** Walker, 1872*a*: 113. Holotype ♀ with labels: circular green B.M. type label; '199. RHYPAROCHROMUS EROSUS.' Pinned through scutellum and mounted on polyporus strip; end two segments of left antenna, end segment of right antenna, left fore and hind tibia, right middle tarsus and right hind leg missing. Present combination *Metochus erosus* (Walker).

erubescens **(*Pamera*)** Distant, 1883*a*: 434. LECTOTYPE ♀ with labels: circular red B.M. type label; 'erubescens Dist.' [Distant's handwriting]; 'Japan (Lewis)'; 'Distant Coll. 1911—383.' Glued to card; legs and antennae somewhat damaged and glued to card. Synonym of *Pachybrachius luridus* (Hahn, 1826).

excavatus **(*Arrianus*)** Distant, 1904*a*: 74. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Arrianus excavatus Dist.' [Distant's handwriting]; 'Mungphu'; 'Distant Coll. 1911—383.' Glued to card point; antennae, left fore leg, left hind leg, right middle and hind leg missing; abdomen dissected.

exigua **(*Pamera*)** Distant, 1883*a*: 434. LECTOTYPE ♂ with labels: circular red B.M. type label; 'exigua Dist.'; 'Japan (Lewis)'; 'Distant Coll. 1911—383.' Glued to card; end segment of right antenna missing. Present combination *Paromius exiguus* (Distant).

eximius **(*Heraeus*)** Distant, 1882*a*: 204. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Heraeus eximus Dist.' [Distant's handwriting]; 'Las Mercedes, 3000 ft. Champion.'; and the B.C.A. label. Glued to card; right fore leg missing.

extremus **(*Rhyparochromus*)** Walker, 1872*a*: 99. Holotype ♂ (not ♀) with labels: circular green B.M. type label; 'Siam'; 'Saunders. 65.13.'; '157. RHYPAROCHROMUS EXTREMUS.' Pinned through pronotum and mounted on card point; end three segments of both antennae, left middle and hind leg, right fore and hind leg missing. Present combination *Neolethaeus extremus* (Walker). **Comb. n.**

fasciatus **(*Narbo*)** Distant, 1901*b*: 505. LECTOTYPE ♀ with labels: circular red B.M. type label; 'fasciatus Dist.' [Distant's handwriting]; 'S.E. Borneo'; 'Atkinson Coll. 92–6.' Pinned through scutellum.

fasciatus **(*Trapezus*)** Distant, 1882*a*: 217. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Trapezus fasciatus Dist.' [Distant's handwriting]; 'San Isidro, 1600 ft. Champion.'; and the B.C.A. label. Glued to card. Present combination *Cryphula fasciata* (Distant).

ferrugineus **(*Aphanus*)** Distant, 1918*b*: 263. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Aphanus ferrugineus Dist. type' [Distant's handwriting]; 'Nyassa (Cotterell)'; 'Distant Coll. 1911—383.' Pinned through scutellum and mounted on polyporus strip; end three segments of left antenna, right antenna, left fore leg, right fore and hind leg missing. Present combination *Naphiellus ferrugineus* (Distant). **Comb. n.**

festiva **(*Pamera*)** Distant, 1883*a*: 436. LECTOTYPE ♂ with labels: circular red B.M. type label; 'festiva Dist.' [Distant's handwriting]; 'Japan (Lewis)'; 'Distant Coll. 1911—383.' Glued to card. Present combination *Pachybrachius festivus* (Distant).

festivus **(*Poeantius*)** Distant, 1901*b*: 506. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Poeantius festivus Dist. '[Distant's handwriting]; 'Calc. 5913/11'; 'Distant Coll. 1911—383.' Pinned through pronotum and mounted on card; left antenna, end segment of right antenna and left hind leg missing.

firmus **(*Neocattarus*)** Distant, 1882*a*: 213. Holotype ♀ with labels: circular red B.M. type label; 'Neocattarus firmus Dist.' [Distant's handwriting]; 'Caldera, 1200 ft. Champion.'; and the B.C.A. label. Glued to card.

flavomarginata **(*Kanigara*)** Distant, 1906*a*: 415. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Kanigara flavomarginata Dist. type' [Distant's handwriting]; 'Peradeniya, Ceylon, 10—05'; 'Distant Coll. 1911—383.' Micropinned from below through scutellum and mounted on polyporus strip; end segment of both antennae and both hind legs missing.

***flavonotata* (*Pamera*)** Distant, 1914*b*: 380. LECTOTYPE ♀ with labels: circular yellow B.M. cotype label; 'Pamera flavonotata Dist cotype' [Distant's handwriting]; 'Oubatche, N. Caledonia. Sept. 1911;' 'Distant Coll. 1911—383.' Glued to card; end three segments of left antenna, end two segments of right antenna, both fore tarsi and both fore wings missing. Synonym of *Pachybrachius nietneri* (Dohrn, 1860).

***flori* (*Lasiocoris*)** Douglas & Scott, 1868*b*: 67. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Flori D. & S. Type'; 'Saunders Coll. Brit. Mus. 1910—357.' Micropinned through pronotum and mounted on card; right hind leg missing. Synonym of *Lasiocoris anomalus* (Kolenati, 1845).

***forbesii* (*Aspilocoryphus*)** Kirkaldy, 1899*b*: 46. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Aspilocoryphus forbesii Kirk type' [Kirkaldy's handwriting]; 'Jean-agahan, Socotra. 1200 feet. 29.Jan.99. W. R. O. Grant. 29–85.'; 'Socotra. W. R. Ogilvie Grant. 1901—289.' Pinned through hind part of pronotum. Present combination *Dieuches forbesii* (Kirkaldy).

***formicarius* (*Phaeax*)** Distant, 1893*a*: 413. Lectotype ♂ with labels: circular red B.M. type label; 'Phaeax formicarius Dist.' [Distant's handwriting]; 'V. de Chiriqui, 25–4000 ft. Champion.'; 'Sp. figured.'; and the B.C.A. label. Glued to card. Lectotype designated by Woodward (1962).

***formosa* (*Plociomera*)** Distant, 1882*a*: 210. LECTOTYPE ♂ with labels: circular red B.M. type label; 'S. Geronimo, Guatemala. Champion.'; and the B.C.A. label. Remounted on card point. Present combination *Exptochiomera formosa* (Distant).

***forreri* (*Pseudopamera*)** Distant, 1893*a*: 399. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Pseudopamera forreri Dist.' [Distant's handwriting]; 'Presidio Mexico Forrer'; 'Sp. figured.' Glued to card. Present combination *Caenopamera forreri* (Distant).

***fraternus* (*Cligenes*)** Distant, 1918*a*: 197. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Cligenes fraternus Dist. type' [Distant's handwriting]; 'Ceylon. E. E. Green.'; 'Distant Coll. 1911—383.' Remounted on card point; end two segments of both antennae missing. Present combination *Botocudo fraternus* (Distant). **Comb. n.**

The type series of this species consisted of 2 ♀ specimens mounted on the same card: the two were not congeneric. Both were similar in coloration, but one has a median longitudinal fuscous streak on the hind lobe of the pronotum. The original description says 'the pale posterior area sometimes crossed by a central castaneous line' and at the end 'Allied to C. patricius Dist.' A study of the lectotype of *patricius* in Genoa shows that the specimen of 'fraternus' with the dark streak on the hind part of the pronotum, is very similar to *patricius*, so this ♀ has been selected lectotype of *fraternus*.

***fulgida* (*Agunga*)** Distant, 1909*c*: 334. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Agunga fulgida Dist. type' [Distant's handwriting]; 'Calcutta, N.A. 3/4.viii.07'; 'Distant Coll. 1911—383.' Micropinned through scutellum from below and mounted on pith; left hind leg missing; abdomen dissected. Synonym of *Appolonius cincticornis* (Walker, 1872). **Syn. n.**

***funestus* (*Aphanus*)** Distant, 1918*c*: 243. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Aphanus funestus Dist. type' [Distant's handwriting]; 'Indo-China. Kompong Kedey, V. R. de Salvaza 1917–98.' Glued to card; end two segments of both antennae missing. Present combination *Rhyparothesus funestus* (Distant). **Comb. n.**

***fuscans* (*Dieuches*)** Distant, 1904*a*: 83. LECTOTYPE ♀ with labels: circular red B.M. type label; 'fuscans Dist.' [Distant's handwriting]; 'Seebsanga. S.E. Peal.'; 'Distant Coll. 1911—383.' Pinned through scutellum and mounted on polyporus strip; end segment of both antennae, right hind leg, left fore and hind leg missing; abdomen dissected.

***gardineri* (*Cligenes*)** Distant, 1913*a*: 153. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Cligenes gardineri Dist. type' [Distant's handwriting]; 'Mahe, '08–9 Seychelles Exp.';

'Percy Sladen Trust Expedition. 1911—497'. Glued to card; end segment of left antenna missing. Present combination *Botocudo gardineri* (Distant). **Comb. n.**

***gemmata* (*Pamera*)** Distant, 1918*c*: 242. LECTOTYPE ♀ with labels: circular red B.M. type label; 'gemmatus Dist. type' [Distant's handwriting]; 'Tonkin. Hoabinh. Jan. 1917. R. V. de Salvaza.' Glued to card; left middle and hind leg, right hind leg missing. Present combination *Pachybrachius gemmatus* (Distant).

***gemmatus* (*Fabulinus*)** Distant, 1918*a*: 196. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Fabulinus gemmatus Dist. type' [Distant's handwriting]; 'Lovedale Nilgiri Hills. S. India. T. V. Campbell.'; '136'; 'S. India. E. A. Butler. 1915–60.' Glued to card. Present combination *Bocundostethus gemmatus* (Distant).

***germanus* (*Eremocoris*)** Distant, 1893*a*: 407. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Eremocoris germanus Dist.' [Distant's handwriting]; 'Sp. figured.'; 'Totonicapam, 85–10,500 ft. Champion'. Glued to card. Present combination *Bergidia germana* (Distant).

***glaberrimus* (*Rhyparochromus*)** Walker, 1872*a*: 94. LECTOTYPE ♀ with labels: circular green B.M. type label; '122. RHYPAROCHROMUS GLABERRIMUS.' Glued to card; end segment of both antennae and left hind leg missing. Present combination *Camptocera glaberrima* (Walker).

***globosus* (*Prytanes*)** Distant, 1893*a*: 401. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Prytanes globosus Dist.' [Distant's handwriting]; 'R. Sarstoon. B. Honduras. Blancaneau.'; 'Sp. figured.'; and the B.C.A. label. Glued to card; left antenna and right hind leg missing.

***gracilis* (*Neocattarus*)** Distant, 1882*a*: 215. LECTOTYPE ♀ with labels: circular red B.M. type label; 'gracilis Dist.' [Distant's handwriting]; 'San Isidro, 1600 ft. Champion.'; and the B.C.A. label. Glued to card.

***gracilis* (*Porta*)** Distant, 1903*h*: 246. LECTOTYPE ♂ with labels: circular red B.M.: type label; 'Porta gracilis Dist.' [Distant's handwriting]; 'Bulsit Besar. Siam: Malay States No. ?'.[1] Pinned through pronotum and mounted on card; left antenna, end segment of right antenna, and both fore legs missing. There is also 1 ♀ in collection with the same data.

***gracilis* (*Sphaerobius*)** Uhler, 1893*c*: 711. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Sphaerobius gracilis Uhler'; 'Leeward side St. Vincent, W.I. H. H. Smith. 88.'; '95–206.' Glued to card point; left fore leg missing.

***gracilis* (*Stenocoris*)** Rambur, 1839*a*: 140. LECTOTYPE ♀ with labels: 'Corse'; '28.'; 'Stenocoris R gracilis R' on green paper; 'Paromius gracilis R.' Glued to card; pronotum, left antenna, end segment of right antenna and both fore legs missing. Present combination *Paromius gracilis* (Rambur).

***greeni* (*Altomarus*)** Distant, 1903*d*: 73. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Altomarus greeni Dist.' [Distant's handwriting]; 'Gampola Ceylon. 2.1902'; '906'; 'Distant Coll. 1911—383.' Micropinned through scutellum from below and mounted on card; abdomen dissected.

***greeni* (*Rhyparochromus*)** Kirby, 1891*a*: 100. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Rhyparochr. Greeni, Kb. type'; 'Pundalova Ceylon 4'. Glued to card point; end three segments of right antenna, left middle tibia and tarsus, left hind leg and right hind leg missing. Present combination *Neolethaeus greeni* (Kirby). **Comb. n.**

***gutta* (*Rhyparochromus*)** Dallas, 1852*a*: 573. LECTOTYPE ♀ with labels: circular red B.M. type label; 'N. India 48 13'; '152. RHYPAROCHROMUS GUTTA,'. Glued to card. Present combination *Pachybrachius guttus* (Dallas).

***guttata* (*Orthaea*?)** Dallas, 1852*a*: 580. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Jam Gope'; '2. ORTHAEA GUTTATA,'; 'Saunders. 65. 13.' Pinned through apex

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[1] A somewhat illegible pencil number, first numeral struck out (?), other possibly 70.

of right clavus and mounted on polyporus strip; all legs except right fore leg, both antennae except first segment of right, and right hemielytron missing. Present combination *Heraeus guttatus* (Dallas).

Note: Distant's B.C.A. material from Guatemala is not conspecific.

***hemipterus* (*Diplonotus*)** Scott, 1874*a*: 431. LECTOTYPE ♀ with labels: circular red B.M. type label; '28'; 'JAPAN'; 'hemiptera n. sp.'. Pinned through scutellum; left hind leg missing. Present combination *Togo hemipterus* (Scott).

***hewitti* (*Aphanus*)** Distant, 1906*a*: 415. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Aphanus hewitti Dist. type' [Distant's handwriting]; 'Kuching April 1906 JH'; '133'; 'Distant Coll, 1911—383.' Pinned through base of abdomen and mounted on polyporus strip. Present combination *Elasmolomus hewitti* (Distant).

***holsti* (*Metochus*)** Distant, 1918*b*: 265. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Metochus holsti Dist. type' [Distant's handwriting]; 'Tsur I. Holst. 98–214.'; 'Tsuchima I. P. Holst. 98–214.' Pinned through scutellum; left antenna, end segment of right antenna, left fore leg, right fore and hind leg missing.

***horvathi* (*Plinthisus*)** Saunders, 1877*a*: 104. Holotype ♂ with labels: circular red B.M., Type H.T. label; 'Plinthisus Horvathi E.S. Type'; 'Saunders Coll. Brit. Mus. 1910—357. Glued to card; end three segments of left antenna missing. Underside of card has letters 'B.B.' Synonym of *Plinthisus marginatus* (Ferrari, 1874).

***illitus* (*Heraeus*)** Distant, 1882*a*: 205. LECTOTYPE ♂ with labels: circular red B.M. type label: 'Heraeus illitus Dist.' [Distant's handwriting]; 'San Juan, Vera Paz. Champion.' Glued to card.

***illuminatus* (*Dorochosa*)** Distant, 1893*a*: 409. Lectotype ♂ with labels: circular red B.M. type label; 'Dorochosa illuminatus Dist.' [Distant's handwriting]; 'Quiche Mts., 7–9000 ft Champion.' Glued to card to left of another ♂. Designated by Slater & Ashlock (1966). Present combination *Delochilocoris illuminatus* (Distant).

***illuminatus* var. *umbrosus* (*Dorochosa*)** Distant, 1893*a*: 409. See *umbrosus*.

***illustris* (*Metochus*)** Distant, 1918*a*: 200. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Dieuches illustris Dist. type' [Distant's handwriting]; 'Chikkaballapura. S. India. T. V. Campbell'; 'L 15'; 'S. India. E. A. Butler. 1915–60.' Glued to card. Synonym of *Pachybrachius nietneri* (Dohrn, 1860).

***incisus* (*Rhyparochromus*)** Walker, 1872*a*: 100. Holotype ♀ (not ♂) with labels: circular green B.M. type label; 'incisus W. type'; 'Thwaites 67.25'; 'Rhyparochromus incisus.' Glued to card; left fore leg missing. Original description says specimen a ♂. Present combination *Eucosmetus incisus* (Walker).

***inconspicuus* (*Rhyparochromus*)** Dallas, 1852*a*: 574. Type material not located. Present combination *Pachybrachius inconspicuus* (Dallas).

***indicus* (*Aphanus*)** Dallas, 1852*a*: 559. LECTOTYPE ♂ with labels: circular red B.M. type label; 'N. India'; '14. APHANUS INDICUS,'. Glued to card. Present combination *Lamproceps indicus* (Dallas).

***indicus* (*Lethaeus*)** Dallas, 1852*a*: 558. LECTOTYPE ♀ with labels: circular red B.M. type label; 'N. Bengal 42.25'; '2. LETHAEUS INDICUS,'. Pinned through scutellum and mounted on polyporus strip; end two segments of left antenna, end segment of right antenna, left hind leg and right middle tarsus missing.

***indicus* (*Primierus*)** Distant, 1901*b*: 478. LECTOTYPE ♀ with labels: circular red B.M. type label; 'indicus Dist.' [Distant's handwriting]; 'Calcutta'; 'Atkinson Coll. 92–6.' Glued to card; left antenna, end segment of right antenna and both fore legs missing. In the collection, in addition there are 1 ♂, 2 ♀.

***inermibus* (*Myodocha*)** Distant, 1882*a*: 204. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Myodocha inermibus Dist.' [Distant's handwriting]; 'V. de Chiriqui, 25–4000 ft. Champion.' Glued to card; right fore leg missing.

***infumatus* (*Ligyrocoris*)** Distant, 1882*a*: 202. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Ligyrocoris infumatus Dist.' [Distant's handwriting]; 'Quiche Mts., 7–9000 ft. Champion.'; 'Distant Coll. 1911—383.' Glued to card, with an additional ♂ to left; both hind legs missing.

***inornatus* (*Rhyparochromus*)** Walker, 1872*a*: 112. LECTOTYPE ♂ with labels: circular green B.M. type label; 'N. Zeal. 54.4'; '196. RHYPAROCHROMUS INORNATUS.' Pinned through scutellum and mounted on card point. Present combination *Remaudiereana inornatus* (Dallas). **Comb. n.**

***insignis* (*Critobulus*)** Distant, 1903*h*: 250. LECTOTYPE a nymph with labels: circular red B.M. type label; 'Critobulus insignis Dist.' [Distant's handwriting]; 'Margherita'; 'Distant Coll. 1911—383.' Pinned through pronotum; end segment of both antennae missing; left hind leg, right fore and hind leg missing. Present combination *Dieuches insignis* (Distant).

***insignis* (*Diniella*)** Distant, 1918*a*: 198. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Diniella insignis Dist. type' [Distant's handwriting]; 'Chikkaballapura. S. India. T.V.C.'; '471'; 'S. India. E. A. Butler. 1915–60.' Glued to card; underside of card has number '47'.

***insignis* (*Eucosmetus*)** Distant, 1901*b*: 482. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Eucosmetus insignis Dist.' [Distant's handwriting]; 'Margherita 9318'; 'Distant Coll. 1911—383.' Micropinned through anterior lobe of pronotum and mounted on cork; end three segments of both antennae missing. Present combination *Caridops insignis* (Distant).

***insignis* (*Pamera*)** Distant, 1901*b*: 481. LECTOTYPE ♀ with labels: circular red B.M. type label; 'insignis Dist.' [Distant's handwriting]; 'Jan 98 North Coast'; 'Christmas I. C. W. Andrews. 98—20.' Glued to card point; end three segments of left antenna missing. Present combination *Pachybrachius insignis* (Distant).

***insignis* (*Pephysena*)** Distant, 1882*a*: 121. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Pephysena insignis Dist.' [Distant's handwriting]; 'Bugaba, 800–1500 ft. Champion.' Glued to card; right hind leg missing. Present combination *Distingphyses insignis* (Distant).

***insititia* (*Erlacda*?)** Distant, 1882*a*: 401. Holotype ♀ with labels: circular red B.M. type label; 'Erlacda? insititia Dist.' [Distant's handwriting]; 'Amula, Guerrero 6000 ft. Aug. H. H. Smith'; 'Sp. figured.' Glued to card; end three segments of right antenna missing. Present combination *Ligyrocoris insititius* (Distant).

***intaminatus* (*Abdolominus*)** Distant, 1904*a*: 91. LECTOTYPE ♀ with labels: circular red B.M. type label; 'intaminatus Dist.' [Distant's handwriting]; 'Carin Chebà. 900–1100 m. L. Fea V XII-88'; 'Distant Coll. 1911—383.' Glued to card; end two segments of left antenna and end segment of right antenna missing. Present combination *Diniella intaminata* (Distant).

***intermedia* (*Myodocha*)** Distant, 1882*a*: 203. LECTOTYPE ♂ with labels: circular red B.M. type label; 'intermedia Dist.' [Distant's handwriting]; 'Aceituno, Guatemala. Champion.'; 'Distant Coll. 1911—383.' Glued to card.

The original description mentions material from Mexico: Orizaba; Guatemala: Pantaleon, Aceituno and Senahu. Later Distant added *intermedia* from Mexico: Jalapa, Atoyae in Vera Cruz, Chilpaningo in Guerrero; Guatemala: Les Mercedes. Only the specimens from Orizaba, Jalapa, Chilpaningo, Aceituno and Les Mercedes are conspecific with the lectotype.

***intrusa* (*Ampera*)** Distant, 1919*a*: 41. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Ampera intrusa Dist. type' [Distant's handwriting]; 'Java 1918 Dr. Van Horn, From stored rice'; '1919—125'. Glued to card; last two segments of left antenna and last segment of right antenna missing; abdomen dissected. In the collection in addition there are 2 ♂.

***irrorandus* (*Neocattarus*?)** Distant, 1893*a*: 404. Holotype ♀ with labels: circular red B.M. type label; 'Neocattarus irrorandus Dist.' [Distant's handwriting]; 'Cubilguitz, Vera

Paz. Champion.'; 'Sp. figured.'; and the B.C.A. label. Glued to card; end segment of left antenna missing.

***japonica* (*Plociomera*)** Distant, 1883*a*: 437. LECTOTYPE ♀ with labels: circular red B.M. type label; 'japonica Dist.' [Distant's handwriting]; 'Japan (Lewis)'; 'Distant Coll. 1911—383.' Glued to card. Present combination *Stigmatonotum japonicum* (Distant).

***jejunus* (*Pamera*)** Distant, 1883*a*: 434. LECTOTYPE ♀ with labels: circular red B.M. type label; 'jejunus Dist.' [Distant's handwriting]; 'Japan (Lewis)'; 'Distant Coll. 1911—383.' Glued to card. Present combination *Paromius jejunus* (Distant).

***karenia* (*Uzza*)** Distant, 1909*c*: 339. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Uzza karenia Dist. type' [Distant's handwriting]; 'Carin Ghecù 1400–1500 m. L. Fea. III–IV.88.'; 'Distant Coll. 1911—383.' Glued to card; end segment of left antenna missing; right antenna apparently oligomerous. There is also 1 ♀ in the collection in addition.

***kydippe* (*Ptochiomera*)** Kirkaldy, 1905*a*: 346. LECTOTYPE ♂ with labels: 'TYPE'; 'Lifu Loyalty Is. A. Willey D.Sc. Reg. Mar. 1. 1898.'; circular red B.M. type label; 'Brit. Mus. 1950–82'; 'Ptochiomera Kydippe Kirk. Type.' Glued to card; left fore leg, right middle tibia and tarsus missing. Present combination *Remaudiereana kydippe* (Kirkaldy).

***lateralis* (*Aphanus*)** Distant, 1918*a*: 198. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Aphanus lateralis Dist. type' [Distant's handwriting]; '54'; 'Kodai Kanal S. India, Campbell.'; 'S. India. E. A. Butler. 1915–60.' Glued to card; underside of card has data 'K.K. 4.14. 54' Synonym of *Dieuches neolateralis* Scudder, 1962, a new name for *Dieuches lateralis* (Distant) which is preoccupied.

***lateralis* (*Diplonotus*)** Scott, 1874*a*: 432. LECTOTYPE ♂ with labels: circular red B.M. type label; 'JAPAN'; '——— lateralis, n. sp.' Glued to card; part of end segment of left antenna and tibia and tarsus of left hind leg missing. Present combination *Pachybrachius lateralis* (Scott).

***laticeps* (*Ischnocoris*)** Saunders, 1893*a*: 100. Holotype ♂ with labels: circular red B.M. Type H.T. label; 'Tetuan, Morocco. J. J. Walker.'; 'laticeps Mihi' [Saunders' handwriting]. Glued to card; left fore leg missing.

***latus* (*Aphanus*)** Distant, 1904*a*: 81. LECTOTYPE ♀ with labels: circular red B.M. type label; 'latus Dist.' [Distant's handwriting]; 'Rangoon'; 'Distant Coll. 1911—383.' Glued to card; end two segments of both antennae missing. Present combination *Naphiellus latus* (Distant).

***latus* (*Bosbequius*)** Distant, 1904*a*: 65. Lectotype in Genoa, designated by Scudder (1966).

***leucoceras* (*Rhyparochromus*)** Walker, 1872*a*: 101. Holotype ♂ with labels: circular green B.M. type label; 'Ceylon 52 62'; 'leucoceras W. type' [Walker's handwriting]; '161. RHYPAROCHROMUS LEUCOCERAS.' Glued to card point; all appendages except hind legs missing; pronotum crushed. Present combination *Dieuches leucoceras* (Walker).

***leucospilus* (*Rhyparochromus*)** Walker, 1872*a*: 98. Holotype ♀ with labels: circular green B.M. type label; 'Sylhet'; 'Bowring. 63.47'; '155. RHYPAROCHROMUS LEUCOSPILUS.' Pinned through metathorax and mounted on polyporus strip; left antenna, left middle leg, left hind tarsus and right hind leg missing. Present combination *Lachnesthus leucospilus* (Walker).

***levis* (*Pephysena*)** Distant, 1882*a*: 211. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Pephysena levis Dist.' [Distant's handwriting]; 'Tamahu, Vera Paz. Champion.' Glued to card, with an additional ♂ on right; right hind leg missing. There are in addition 7 ♂ from Tamaha and 1 ♀ from Senahu in the collection.

The two males from which the lectotype has been selected, differ in the length of the 'neck', and were figured by Distant (1882*a*: Pl. 18, figs. 24 & 25): that figured with the short 'neck' (fig. 24) has been selected as lectotype.

***lewisi* (*Lethaeus*)** Distant, 1883*a*: 440. LECTOTYPE ♂ with labels: circular red B.M. type label; 'lewisi Dist'. [Distant's handwriting]; 'Japan (Lewis)'; 'Distant Coll. 1911—383.' Glued to card. Present combination *Neolethaeus lewisi* (Distant). **Comb. n.**

lewisi **(*Mizaldus*)** Distant, 1901*b*: 484. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Mizaldus Lewisi Dist.' [Distant's handwriting]; 'Ceylon (Lewis)'; 'Distant Coll. 1911—383.' Glued to card; abdomen dissected.

lewisi **(*Paradieuches*)** Distant, 1883*a*: 439. LECTOTYPE ♂ with labels: circular red B.M. type label; 'lewisi Dist.' [Distant's handwriting]; 'Japan (Lewis)'; 'Distant Coll. 1911—383.' Glued to card.

lineatus **(*Rhyparochromus*)** Dallas, 1852*a*: 575. LECTOTYPE ♀ with labels: circular red B.M. type label; '5 41 232 17'; '98. RHYPAROCHROMUS LINEATUS,'. Glued to card on side; right hind leg missing. Synonym of *Pachybrachius bilobatus* (Say, 1831).

lineosus **(*Aphanus*)** Distant, 1901*b*: 503. LECTOTYPE ♂ with labels: circular red B.M. type label; 'lineosus Dist.' [Distant's handwriting]; 'Ceylon (Lewis)'; 'Distant Coll. 1911—383.'. Glued to card; fore and middle legs on left side missing; underside of card has date '27/1/84''. Present combination *Elasmolomus lineosus* (Distant).

littoralis **(*Aphanus*)** Distant, 1918*b*: 262. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Aphanus littoralis Dist. type' [Distant's handwriting]; 'Blue Nile. E. S. Crespin. 1905—329.' Glued to card point; of appendages only left antenna present. Synonym of *Elasmolomus sordidus* (Fabricius, 1787).

longicollis **(*Rhyparochromus*)** Dallas, 1852*a*: 570. LECTOTYPE ♂ with labels: circular red B.M. type label; '185. RHYPAROCHROMUS LONGICOLLIS,'. Pinned through scutellum and mounted on polyporus strip; head, pronotum, scutellum, left middle and right fore leg only present. Present combination *Dieuches longicollis* (Dallas).

longulus **(*Rhyparochromus*)** Dallas, 1852*a*: 578. LECTOTYPE ♀ with labels: circular red B.M. type label; '40 4 3 657'; '198. RHYPAROCHROMUS LONGULUS,'. Pinned through scutellum; head, pronotum, fore legs and right hind leg missing. Present combination *Paromius longulus* (Dallas).

lounsburyi **(*Pamera*)** Distant, 1904*e*: 435. LECTOTYPE ♀ with labels: circular red B.M. type label; 'lounsberyi Dist.' [Distant's handwriting]; 'Paarl, C.G.H. 1 Sept. '01'; 'Distant Coll. 1911—383.' Glued to card point; end segment of both antennae missing. Synonym of *Pachybrachius capicolus* (Stål, 1874).

luridus **(*Diplonotus*)** Scott, 1874*a*: 432. LECTOTYPE with labels: circular red B.M. type label; '26.'; 'JAPAN'; '——— luridus, n. sp.' Pinned through scutellum and mounted on polyporus strip; metathorax and hemielytra only present. Synonym of *Pachybrachius scotti* (Distant, 1901), new name for *P. luridus* (Scott) which is preoccupied.

luscinus **(*Rhyparochromus*)** Walker, 1872*a*: 93. LECTOTYPE ♀ with labels: circular green B.M. type label; '120. RHYPAROCHROMUS LUSCINUS.' Glued to card and joined to a ♂ *in copula*. Synonym of *Beosus maritimus* (Scopoli, 1763).

luteicornis **(*Rhyparochromus*)** Walker, 1872*a*: 107. LECTOTYPE ♂ with labels: circular green B.M. type label; 'Mak'; 'Celebes Saunders'; '178. RHYPAROCHROMUS LUTEICORNIS.' Remounted on card point; right hind leg missing. Present combination *Faelicianus luteicornis* (Walker).

luteovaria **(*Lachnophoroides*)** Distant, 1920*a*: 153. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Lachnophoroides luteovaria Dist. type' [Distant's handwriting]; 'Central New Caledonia. 30.xi.1914. P. D. Montague. 1918–87.' Glued to card; abdomen dissected.

macularia **(*Baladeana*)** Distant, 1914*b*: 381. LECTOTYPE ♀ with labels: circular yellow B.M. cotype label; 'Baladeana macularia Dist. cotype' [Distant's handwriting]; 'Panié, N. Caledonia. 500 m. 27.6.11.''; 'Distant Coll. 1911—383.' Glued to card; end three segments of left antenna missing; abdomen dissected.

maculatus **(*Bathycles*)** Distant, 1893*a*: 403. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Bathycles maculatus Dist.' [Distant's handwriting]; 'Pantaleon, 1700 ft. Champion'; and the B.C.A. label. Glued to card; right middle leg missing.

***maculatus* (*Lethaeus*)** Distant, 1901*b*: 507. LECTOTYPE ♂ with labels: circular red B.M. type label; 'maculatus Dist.' [Distant's handwriting]; 'Flying Fish Cove. Oct. 97.'; 'Christmas I. C. W. Andrews. 98—20.' Glued to card point; end segment of right antenna, left hind leg and right middle leg missing. Present combination *Elasmolomus maculatus* (Distant). **Comb. n.**

***maculatus* (*Neocattarus*)** Distant, 1893*a*: 403. Holotype ♀ with labels: circular red B.M. type label; 'Neocattarus maculatus Dist.' [Distant's handwriting]; 'Chilpancingo, Guerrero, 4600 ft. June. H. H. Smith.'; 'Sp. figured.'; and the B.C.A. label. Glued to card; left antenna, end two segments of right antenna and right hind leg missing.

***maculicollis* (*Rhyparochromus*)** Walker, 1872*a*: 111. Holotype ♀ with labels: circular green B.M. type label; 'Adelaide 59 52'; '194. RHYPAROCHROMUS MACULICOLLIS.' Pinned through right clavus and mounted on polyporus strip; left legs and end three segments of left antenna missing. Present combination *Dieuches maculicollis* (Walker).

***maculipennis* (*Lethaeus*)** Distant, 1918*c*: 244. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Lethaeus maculipennis Dist. type' [Distant's handwriting]; 'Indo-China. Kompong Kedey, V. R. de Salvaza 1917–98.' Glued to card; end segment of left antenna, end two segments of right antenna missing. Present combination *Usilanus maculipennis* (Distant).

***maderensis* (*Rhyparochromus*)** Wollaston, 1858*a*: 123. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Rhyparochromus Maderensis. Woll.'; 'Madeira. Wollaston. 55.7'. Pinned through scutellum. There are in addition 1 ♂, 1 ♀ with similar data in the collection, and 1 ♀ with '1480' on underside of card. Present combination *Eremocoris maderensis* (Wollaston).

***majusculus* (*Gonatas*)** Distant, 1904*a*: 90. LECTOTYPE ♂ with labels: circular red B.M. type label; 'majusculus Dist.' [Distant's handwriting]; 'Tenasserim M. Mooleyit 1800–1900 m. Fea. Marzo 1887.'; 'Distant Coll. 1911—383.' Glued to card. Present combination *Trichodrymus majusculus* (Distant).

***manipurensis* (*Naudarensia*)** Distant, 1909*c*: 339. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Naudarensia manipurensis Dist. type' [Distant's handwriting]; 'Ukhrul Manipur. 6400 feet. Lat 25. Long 94–95 E. VIII–08. Revd. W. Pettigrew'; 'Distant Coll. 1911—383.' Pinned through scutellum from below and mounted on card; end segment of left antenna, end three segments of right antenna missing.

***marginatus* (*Drymus*)** Distant, 1883*a*: 440. NEOTYPE ♀ with labels: 'Ichiuchi 30.iv.–2.v.81.'; 'Japan. G. Lewis. B.M. 1926—269'. Glued to card; underside of card with '1.5.81'. The Distant type material has been destroyed, although a pin with labels is present. The neotype is selected from material which was added to the collections in 1926.

***membraneus* (*Lamproplax*)** Distant, 1833*a*: 440. LECTOTYPE ♀ with labels: circular red B.M. type label; 'membraneus Dist.' [Distant's handwriting]; 'Japan (Lewis)'; 'Distant Coll. 1911—383.' Glued to card. In addition in the collection there are 1 ♂, 1 ♀ with the same data.

***membraneus* var. *pallescens* (*Lamproplax*)** Distant, 1883*a*: 441. See *pallescens*.

***merula* (*Lachnophorus*)** Distant, 1904*a*: 70. LECTOTYPE ♀ with labels: circular red B.M. type label; 'merula Dist.' [Distant's handwriting]; 'Burma Karenee'; 'Distant Coll. 1911—383.' Glued to card; end three segments of left antenna and end segment of right antenna missing. Present combination *Lachnesthus merulus* (Distant).

***mimicus* (*Eucosmetus*)** Distant, 1909*c*: 332. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Eucosmetus mimicus Dist. type' [Distant's handwriting]; 'Palon (Pegù)'; 'Distant Coll. 1911—383.' Glued to card point; end two segments of left antenna, left middle tarsus and both hind tibia and tarsus missing. Present combination *Caridops mimicus* (Distant).

***mirabilis* (*Aphanus*)** Distant, 1903*b*: 471. LECTOTYPE with labels: circular red B.M. type label; 'mirabilis Dist.' [Distant's handwriting]; 'Fernando Poo, Sa. Isabel. 1903—188.'

Glued to card point; end two segments of both antennae, left middle and hind leg, all right legs and abdomen missing. Present combination *Exopamera mirabilis* (Distant).

***moerens* (*Pachymerus*)** Germar, 1837*a*: 139. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Cape Gd. Hope. 42–77. Ex. coll. Drège. No. 1209'; '42/77 C.G.H.'; '1209'; 'Pachymerus moerens Germar det. (type)'. Glued to card; head, pronotum, right middle and hind legs missing. Present combination *Rhyparochromus moerens* (Germar).

***moesta* (*Reclada*)** White, 1878*b*: 370. LECTOTYPE ♂ with labels: circular red B.M. type label; '19. Reclada moesta TYPE'; '19 Honolulu'; 'Reclada moesta B.W.'; '19'; 'Pres. by Perth Museum. B.M. 1953—629.' Glued to card; left hind leg missing.

***montanus* (*Manatanus*)** Distant, 1909*b*: 495. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Manatanus montanus Dist. type' [Distant's handwriting]; 'under stones'; 'Matiana 8000 ft. Simla hills N.A.'; 'Distant Coll. 1911—383.' Pinned through metathorax and mounted on card; end segment of both antennae and left fore leg missing. Present combination *Scolopostethus montanus* (Distant).

***multicolorata* (*Albanyaria*)** Distant, 1918*b*: 259. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Albanyaria multicolorata Dist. type' [Distant's handwriting]; '4283'; 'Albany, W. Australia. 91–155.' Glued to card; abdomen dissected. Present combination *Euander multicolorata* (Distant). **Comb. n.**

***multilinea* (*Ischnodemus*)** Walker, 1872*a*: 131. Holotype ♀ with labels: circular green B.M. type label; 'Cape'; 'Saunders 65.13.'; '29. ISCHNODEMUS MULTILINEA.' Pinned through scutellum and mounted on card; head and pronotum detached and glued to card; left antenna, end segment of right antenna, both middle and hind legs missing. Synonym of *Phorcinus albofasciatus* (Stål, 1865).

***munda* (*Tomopelta*)** Uhler, 1893*c*: 709. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Tomopelta munda Uhler'; '95–206.' Glued to card point. Synonym of *Cligenes distinctus* Distant, 1893.

***mundulus* (*Rhyparochromus*)** Walker, 1872*a*: 94. Holotype ♀ with labels: circular green B.M. type label; 'Blissus ? mundus 15 Mad'; '123. RHYPAROCHROMUS MUNDULUS'. Glued to card; left fore leg, right hind tarsus and part of abdomen missing. Synonym of *Ischnocoris mundus* (Walker, 1872).

***mundus* (*Nysius*)** Walker, 1872*a*: 69. Type material not located in the collections. Present combination *Ischnocoris mundus* (Walker).

***murrhea* (*Pamera*)** Distant, 1901*b*: 482. LECTOTYPE ♀ with labels: circular red B.M. type label; 'murrhea Dist.' [Distant's handwriting]. Glued to card. Present combination *Pachybrachius murrheus* (Distant).

***mysorensis* (*Fabulinus*)** Distant, 1918*a*: 195. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Fabulinus mysorensis Dist. type' [Distant's handwriting]; 'Nandidrig. S. India. T.V.C.'; 'L 28'; 'S. India. E. A. Butler. 1915–60.' Glued to card to right of ♂. In the collection also is 1 ♂ with data as lectotype and 1 ♂ with data 'Mysore State. S. India. T.V.C.' Present combination *Thebanus mysorensis* (Distant).

***naini* (*Eremocoris*)** Distant, 1909*b*: 494. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Eremocoris naini Dist. type' [Distant's handwriting]; 'NAINI TAL KUMAON: 6400 ft. N.A.'; 'Distant Coll. 1911—383.' Pinned through scutellum and mounted on card; left hind leg missing. Present combination *Drymus naini* (Distant). **Comb. n.**

***natalensis* (*Gonatas*)** Distant, 1918*b*: 270. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Gonatas natalensis Dist. type' [Distant's handwriting]; 'Natal. Bell–Morley.'; 'Distant Coll. 1911—383.' Glued to card; end two segments of left antenna, end three segments of right antenna and right fore leg missing. Present combination *Stilbocoris natalensis* (Distant).

***nereis* (*Pachymerus*)** Kirkaldy, 1905*a*: 347. LECTOTYPE ♀ with labels: 'Pachymerus nereis'; 'TYPE'; 'Lifu Loyalty Is. A. Willey, D.Sc. Reg. Mar. 1 1898'; circular red B.M.

type label; 'Brit. Mus. 1950–82.'; 'Pachymerus nereis Kirk. Type'. Glued to card with another ♀ on left. Present combination *Elasmolomus nereis* (Kirkaldy).

***nexus* (*Polycrates*)** Distant, 1904*a*: 64. Lectotype in Genoa, designated by Scudder (1966).

***niger* (*Lethaeus*)** Dallas, 1852*a*: 592. Refers to same type material as *Lethaeus africanus* Dallas 1852, of which it is a synonym.

***nigrellus* (*Aphanus*)** Distant, 1918*b*: 264. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Aphanus nigrellus Dist. type' [Distant's handwriting]; 'Nyasaland. Btwn. Ft. Mangoche & Chikala Boma. about 4,000 ft. 20–25 Mch. 1910. S. A. Neave.'; '1912—216.' Glued to card; end segment of left antenna, left middle leg and right fore leg missing. Synonym of *Lachnesthus singalensis* (Dohrn, 1860).

***nigricans* (*Daerlac*)** Distant, 1918*b*: 492. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Daerlac nigricans Dist. type' [Distant's handwriting]; 'Sydney, N.S.W. 1900–1903. J. J. Walker. 1910—384.' Glued to card.

***nigriceps* (*Rhyparochromus*)** Dallas, 1852*a*: 577. LECTOTYPE ♀ with labels: circular red B.M. type label; '502.d'; '168. RHYPAROCHROMUS NIGRICEPS,'. Glued to card; end segment of left antenna, end three segments of right antenna and left fore leg missing. Present combination *Remaudiereana nigriceps* (Dallas).

***nigrinus* (*Thebanus*)** Distant, 1918*b*: 261. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Thebanus nigrinus Dist. type' [Distant's handwriting]; 'Carin Asciuii Ghecu, 1400–1500 m. L. Fea II–IV. 88'; 'Distant Coll. 1911—383.' Glued to card; end two segments of right antenna missing. Present combination *Lemnius nigrinus* (Distant). **Comb. n.**

***nigripes* (*Rhyparochromus*)** Dallas, 1852*a*: 578. Type material not located in the collections. Synonym of *Daerlac cephalotes* (Dallas, 1852).

***nigritulus* (*Rhyparochromus*)** Walker, 1872*a*: 106. Holotype ♀ with labels: circular green B.M. type label; 'SAR.'; 'Saunders 65.13'; '176. RHYPAROCHROMUS NIGRITULUS.' Pinned through scutellum and mounted on polyporus strip; end two segments of both antennae, right fore and hind leg missing. Present combination *Pamerana nigritula* (Walker).

***nigrocapitatus* (*Adauctus*)** Distant, 1918*a*: 195. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Adauctus nigrocapitatus Dist type' [Distant's handwriting]; 'Chikkaballapura S. India T. V. Campbell'; '1342'; 'India. T. V. Campbell 1913—535'. Glued to card with an additional ♂ and ♀ to right. Synonym of *Adauctus cupreus* (Distant, 1909). **Syn. n.**

***nigronitens* (*Eucosmetus*)** Distant, 1918*a*: 191. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Eucosmetus nigronitens Dist. type' [Distant's handwriting]; 'Kodai Kanal. S. India. Campbell.'; '12 4'; 'S. India. E. A. Butler. 1915–60.' Glued to card. Present combination *Caridops nigronitens* (Distant). **Comb. n.**

***nitidus* (*Mimicus*)** Douglas & Scott, 1868*b*: 66. LECTOTYPE ♀ with labels: 'Mimicus nitidus DS Type.'; circular red B.M. type H.T. label; 'Saunders Coll. Brit. Mus. 1910—357.' Pinned through pronotum and mounted on card; both antennae, left fore tarsus, left middle tibia and tarsus missing. Present combination *Lethaeus nitidus* (Douglas & Scott).

***niveomaculatus* (*Cligenes*)** Distant, 1920*a*: 154. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Cligenes niveomaculatus Dist. type' [Distant's handwriting]; 'Houadou, New Caledonia. 26.X.1914. P. D. Montague. 1918–87.' Glued to card. Present combination *Sylvacligenes niveomaculatus* (Distant).

***noctis* (*Lachnophorus*)** Distant, 1904*a*: 69. LECTOTYPE ♂ with labels: circular red B.M. type label; 'noctis Dist.' [Distant's handwriting]; 'Burma, Karennee'; 'Distant Coll. 1911—383.' Glued to card; right hind tarsus and end segment of right antenna missing. Present combination *Lachnesthus noctis* (Distant).

***noctua* (*Clerada*)** Distant, 1901*b*: 476. LECTOTYPE ♀ with labels: circular red B.M. type label; 'noctua Dist.' [Distant's handwriting]; 'N. Borneo'; 'Distant Coll. 1911—383.' Glued to card; end segment of left antenna missing.

***notabilis* (*Lethaeus*)** Distant, 1911*b*: 310. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Lethaeus notabilis Dist. type' [Distant's handwriting]; 'Sigiriya Ceylon. 8.09'; '2740'; 'Distant Coll. 1911—383.'

***notatus* (*Rhyparochromus*)** Dallas, 1852*a*: 569. LECTOTYPE ♀ with labels: circular red B.M. type label; 'New S. Wales 54 2'; '186. RHYPAROCHROMUS NOTATUS,'. Pinned through right clavus and mounted on polyporus strip; middle right leg only present. Present combination *Dieuches notatus* (Dallas).

***notulata* (*Bedunia*)** Distant, 1901*b*: 478. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Bedunia notulata Dist.' [Distant's handwriting]; 'M'; 'Saunders 65.13'. Glued to card point; left antenna, both hind legs and left middle tarsus missing.

***novitius* (*Caeneus*)** Distant, 1893*a*: 404. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Caeneus novitius Dist.' [Distant's handwriting]; 'Bugaba, Panama. Champion'; 'Sp. figured.' Glued to card; abdomen dissected. Synonym of *Bathydema quadristillata* (Stål, 1858).

***novitius* (*Nysius*)** Distant, 1892*b*: 254. LECTOTYPE ♀ with labels: circular red B.M. type label; 'novitius Dist.' [Distant's handwriting]; 'Pretoria (W.L.D.)'; 'Distant Coll. 1911—383.' Glued to card. Present combination *Graphoraglius novitius* (Distant). **Comb. n.**

***oblitus* (*Ligyrocoris*)** Distant, 1882*a*: 202. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Ligyrocoris oblitus Dist.' [Distant's handwriting]; 'S. Geronimo, 3000 ft. Champion.' Glued to card; left hind leg missing.

***obscura* (*Metagerra*)** White, 1878*a*: 34. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Metagerra obscura B.W. TYPE'; 'New Zealand'; 'Pres. by Perth Museum. B.M. 1953—629.'; '22. M. obscura, n. sp.' Glued to card; underside of card with 'N. D. Wakefield.'

***obscuripes* (*Rhyparochromus*)** Walker, 1872*a*: 104. Holotype ♂ with labels: circular green B.M. type label; 'Dorey Wallace'; 'Dor'; 'Saunders 65.13.'; '171. RHYPAROCHROMUS OBSCURIPES.' Glued to card; right hind tarsus missing. Present combination *Dieuches obscuripes* (Walker).

***oceanicus* (*Aphanus*)** Distant, 1901*b*: 502. LECTOTYPE ♀ with labels: circular red B.M. type label; '1361'; 'oceanicus Dist.' [Distant's handwriting]. Glued to card; right hind leg missing. Present combination *Dieuches oceanicus* (Distant).

***orientalis* (*Aphanus*)** Distant, 1904*a*: 81. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Aphanus orientalis Dist. type' [Distant's handwriting]; 'Ranchi Irvine'; 'Distant Coll. 1911—383.' Glued to card point; end two segments of right antenna, right fore tarsus, right middle tarsus, right hind tibia and tarsus, and left hind tarsus missing. Present combination *Rhyparothesus orientalis* (Distant).

***ornandus* (*Scolopostethus*)** Distant, 1904*a*: 93. Lectotype in Genoa, designated by Scudder (1966). Paralectotype in collections ♂ with labels: circular red B.M. type label; 'ornatus Dist.' [Distant's handwriting]; 'Carin Asciuii Ghecu 1400–1500 m. L. Fea. III–IV.88.'; 'Distant Coll. 1911—383.' Glued to card.

***ornata* (*Edulica*)** Distant, 1903*c*: 45. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Edulica ornata Dist.' [Distant's handwriting]; 'Peradeniya, Ceylon, 3.1902'; '1124'; 'Distant Coll. 1911—383.' Micropinned through scutellum from below and mounted on polyporus strip; end segment of left antenna missing. Present combination *Harmostica ornata* (Distant).

***ornatipennis* (*Lachnophoroides*)** Distant, 1914*b*: 381. Type material not in B.M. collections.

***ornatulus* (*Aphanus*)** Distant, 1909*c*: 336. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Aphanus ornatus Dist. type' [Distant's handwriting]; 'Dhakna Bagh Nepal Terai 23–34.IV.07'; 'Distant Coll. 1911—383.' Pinned through scutellum and mounted on card; right fore tibia and tarsus, and right hind leg missing. Present combination *Rhyparothesus ornatulus* (Distant). **Comb. n.**

***ornatus* (*Aphanus*)** Distant, 1918*a*: 199. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Aphanus ornatus Dist. type' [Distant's handwriting]; 'Chikkaballapura, S. India. T. V. Campbell.'; '245'; 'S. India. E. A. Butler. 1915–60.' Glued to card; underside of card with data 'C.B. 9.14'. Present combination *Dieuches ornatus* (Distant).

***ovalis* (*Rhyparochromus*)** Dallas, 1852*a*: 568. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Colombia 46 20'; '104. RHYPAROCHROMUS OVALIS,'. Pinned through scutellum and mounted on polyporus strip; end segment of left antenna, end two segments of right antenna, right fore and middle leg missing. Present combination *Ozophora ovalis* (Dallas).

***ovatus* (*Lemnius*)** Distant, 1904*a*: 67. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Lemnius ovatus Dist.' [Distant's handwriting]; 'Ceylon (Lewis)'; 'Distant Coll. 1911—383.' Glued to card; end segment of left antenna missing; abdomen dissected.

***pallens* (*Rhyparochromus*)** Dallas, 1852*a*: 567. This species was described from a female taken in North Bengal (Lieut. Campbell's Coll.). Walker (1872) lists material as follows: 'a. North Bengal. From Lieut. Campbell's collection. b.————? Presented by W. W. Saunders Esq.' In the collections, I can only locate the latter specimen, a male in poor condition. It is pinned through the pronotum and mounted on a polyporus strip; end three segments of left antenna, end segment of right antenna, all legs on left side, right fore tarsus, middle leg and right hind tarsus missing. It has labels 'Saunders. 65.13.'; '150. RHYPAROCHROMUS PALLENS,'. Since this specimen was not apparently included in the original description, it has not been selected as the lectotype, although no other material is present. Synonym of *Elasmolomus sordidus* (Fabricius, 1787).

***pallescens* (*Davila*)** Distant, 1893*a*: 395. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Davila pallescens Dist.' [Distant's handwriting]; 'V. de Chiriqui, 2–3000 ft. Champion.'; 'Sp. figured.'; and the B.C.A. label. Glued to card; end two segments of left antenna, end segment of right antenna missing. Present combination *Ozophora pallescens* (Distant).

pallescens*, *membraneus var. **(*Lamproplax*),** Distant 1883*a*: 441. LECTOTYPE ♂ with labels: 'Japan (Lewis)'; 'Distant Coll. 1911—383'. Glued to card with written data on underside '8 4 81'.

***pallescens* (*Locutius*)** Distant, 1918*a*: 193. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Locutius pallescens Dist. type' [Distant's handwriting]; 'Chikkaballapura, S. India. T. V. Campbell.'; '356'; 'S. India. E. A. Butler. 1915–60.' Glued to card. Present combination *Plinthisus pallescens* (Distant).

***pallicornis* (*Rhyparochromus*)** Dallas, 1852*a*: 573. LECTOTYPE ♀ with labels: circular red B.M. type label; 'E. India 48 22'; '153. RHYPAROCHROMUS PALLICORNIS,'. Glued to card; left fore and middle leg, right middle leg missing—membrane and end of abdomen damaged. Present combination *Pachybrachius pallicornis* (Dallas).

***pallidulus* (*Dieuches*)** Distant, 1904*a*: 85. LECTOTYPE ♀ with labels: circular red B.M. type label; 'pallidulus Dist.' [Distant's handwriting]; 'Sind'; 'Distant Coll. 1911—383.' Evidently a little teneral; pinned through pronotum and with end three segments of left antenna, right antenna and both hind legs missing.

***pallidus* (*Pygaeus*)** Uhler, 1894*b*: 187. LECTOTYPE ♂ with labels: circular red B.M. type label; '169'; 'Grand Etang Rd. (Leeward side) Grenanda, W.I. H. H. Smith.'; '67'; '95–206'. Glued to card point; end segment of both antennae, both middle and hind legs missing. Present combination *Antillocoris pallidus* (Uhler).

***pallipes* (*Lasiosomus*)** Scott, 1874*a*: 429. LECTOTYPE ♀ with labels: circular red B.M. type label; 'JAPAN'; 'Lasiosoma pallipes, n. sp.'; 'Type Scott Coll. 88–11.' Glued to card. Present combination *Diniella pallipes* (Scott).

***pallipes* (*Paradieuches*)** Distant, 1918*a*: 201. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Paradieuches pallipes Dist. type' [Distant's handwriting]; 'Chikkaballapura S. India. T. V. Campbell.'; 'L 40'; 'S. India. E. A. Butler. 1915–60.' Pinned through scutellum; end segment of right antenna, both fore tibia and tarsi and left middle leg missing. Present combination *Dieuches pallipes* (Distant). **Comb. n.**

***papuanus* (*Aphanus*)** Distant, 1901*b*: 502. LECTOTYPE with labels: circular red B.M. type label; 'papuanus Dist.' [Distant's handwriting]; 'Peak Downes'; 'Distant Coll. 1911—383.' Glued to card and damaged; end segment of both antennae, wings, abdomen and both hind legs missing. Present combination *Elasmolomus papuanus* (Distant).

***parvipictus* (*Dieuches*)** Distant, 1918*b*: 266. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Dieuches parvipictus Dist. type' [Distant's handwriting]; 'Lufira R. Katanga. 3,500 ft. 31–8–07'; 'Neave Coll. 1907—230.' Glued to card point; left antenna, end two segments of right antenna, right middle leg and most tarsi missing.

***parvulus* (*Rhyparochromus*)** Dallas, 1852*a*: 576. LECTOTYPE ♂ with labels: circular red B.M. type label; 'North Amer E.D.'; '9. PLOCIOMERUS PARVULUS,'. Of male and female glued to same card, male to left selected lectotype; end segment of left antenna missing. Synonym of *Pachybrachius vinctus* (Say).

***parvus* (*Neocattarus*)** Distant, 1882*a*: 215. LECTOTYPE ♀ with labels: circular red B.M. type label; 'parvus Dist.' [Distant's handwriting]; 'V. de Atitlan, 23–3500 ft. Champion.'; and the B.C.A. label. Glued to card.

***patricius* (*Cligenes*)** Distant, 1904*a*: 72. Lectotype in Genoa, designated by Scudder (1966). Present combination *Botocudo patricius* (Distant).

***pedata* (*Naudarensia*)** Distant, 1904*a*: 86. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Naudarensia pedata Dist. type' [Distant's handwriting]; 'Shillong LaTouche.'; 'Distant Coll. 1911—383.' Glued to card; end three segments of both antennae, left hind leg, right fore and middle tarsi missing; abdomen dissected.

***percultus* (*Heraeus*)** Distant, 1882*a*: 205. LECTOTYPE ♀ with labels: circular red B.M. type label; 'percultus Dist.' [Distant's handwriting]; 'Guatemala City, 5000 ft. Champion.' Glued to card; left hind tarsus missing. Synonym of *Heraeus setosus* (Stål.).

***phaeophilus* (*Rhyparochromus*)** Walker, 1872*a*: 106. Holotype ♂ (not ♀,) with labels: circular green B.M. type label; 'Mak. 40'; 'Celeb Wallace'; 'Saunders. 65.13.'; '177. RHYPAROCHROMUS PHAEOPHILUS.' Glued to card. Present combination *Navarrus phaeophilus* (Walker).

***picinus* (*Abdolominus*)** Distant, 1904*a*: 91. Lectotype in Genoa, designated by Scudder (1966). Paralectotype in collection ♀ with labels: circular red B.M. type label; 'picinus Dist.' [Distant's handwriting]; 'Carin Cheba, 900–1100 m., L. Fea. V.XII–88"; 'Distant Coll. 1911—383.' Glued to card; left antenna damaged and abdomen dissected.

***pictipennis* (*Rhyparochromus*)** Dallas, 1852*a*: 571. LECTOTYPE ♂ with labels: circular red B.M. type label ; '44 40 V.D.L.'; '187. RHYPAROCHROMUS PICTIPENNIS,'. Pinned through scutellum; both antennae, left middle tarsus, right fore tarsus and right middle and hind legs missing. Synonym of *Euander lacertosus* (Erichson).

***picturata* (*Salacia* ?)** Distant, 1893*a*: 406. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Salacia? picturata Dist.' [Distant's handwriting]; 'V. de Chiriqui, 2–3000 ft. Champion'; and the B.C.A. label. Glued to card and to left of another female specimen. Present combination *Botocudo picturata* (Distant).

Described from eight specimens from Guatemala: Cerro Zunil and Panama: Volcan de Chiriqui and Bugaba. The original description states that the antennae are variable in hue, with the first and fourth segments usually ochraceous. The specimen figured however, has the fourth antennal segment brown. There thus seems to be more than one species in the original series. The lectotype selected has the fourth antennal segment ochraceous.

***picturatus* (*Appolonius*)** Distant, 1918*a*: 191. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Apollonius picturatus Dist. type' [Distant's handwriting]; 'Chikkaballapura, S. India. T. V. Campbell'; 'S. India. E. A. Butler. 1915–60.' Glued to card.

We may note the difference in spelling of the published generic name and that given on the data label: presumably Distant based his spelling on Apollo, the Greek Olympian god of the sun.

picturatus (**Pamera**) Distant, 1904c: 267. LECTOTYPE ♀ with labels: circular red B.M. type label; 'picturatus Dist.' [Distant's handwriting]; 'Townsville, Qld. Oct. '02. F. P. Dodd.'; '1903—356'. Glued to card; middle left leg missing. Present combination *Daerlac picturata* (Distant).

picta (**Pamera**) Scott, 1880a: 306, 311. Not traced. Present combination *Pachybrachius pictus* (Scott).

pictus (**Lethaeus**) Distant, 1918c: 243. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Lethaeus pictus Dist. type' [Distant's handwriting]; 'Laos, Luang Prabang. R. V. de Salvaza 1917–98.'. Pinned through metathorax. Present combination *Usilanus pictus* (Distant).

plenus (**Rhyparochromus**) Distant, 1882a: 216. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Rhyparochromus plenus Dist.' [Distant's handwriting]; 'Quezaltenango, 7800 ft. Champion.'. Partially brachypterous and glued to card. Present combination *Kolenetrus plenus* (Distant).

politus (**Thebanus**) Distant, 1904a: 67. Lectotype in Genoa, designated by Scudder (1966). Paralectotypes 1 ♂, 1 ♀ in collection with labels: circular red B.M. type label; 'politus Dist.' [Distant's handwriting]; 'Carin Ghecù 1400–1500 m. L. Fea. III–IV.88.'; 'Distant Coll. 1911—383. Glued to card.

porrectus (**Catenes**) Distant, 1893a: 397. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Catenes porrectus Dist.' [Distant's handwriting]; 'Sp. figured.'; 'Zapote, Guatemala, G.C. Champion.' Glued to card; abdomen dissected.

proximus (**Rhyparochromus**) Dallas, 1852a: 579. LECTOTYPE with labels: circular red B.M. type label; 'Sierra Leone Morgan'; '29. PLOCIOMERUS PROXIMUS,'. In poor condition, pinned through scutellum and mounted on polyporus strip; meso and metathorax, middle and hind legs, right fore and hind wings only present. Synonym of *Paromius gracilis* (Rambur).

punctata (**Salacia** ?) Distant, 1893a: 406. Holotype ♀ with labels: circular red B.M. type label; 'Salacia? punctata Dist.' [Distant's handwriting]; 'Sp. figured.'; 'Pena Blanca, 3,000–4,000 ft. Champion.'; and the B.C.A. label. Glued to card; end segment of both antennae missing. Present combination *Stygnocoris punctatus* (Distant). **Comb. n.**

purpurata (**Esuris**) Distant, 1893a: 410. Holotype ♂ with labels: circular red B.M. type label; 'Esuris purpurata Dist.' [Distant's handwriting]; 'Sp. figured.'; 'Paso Antonio, 400 ft. Champion.' Partially brachypterous and glued to card. Synonym of *Lipostemmata humeralis* Berg, 1879. **Comb. n.**

pusillus (**Rhyparochromus**) Dallas, 1852a: 577. Represented by abdomen of ♀ only, and lectotype not selected. Pin bears labels: circular red B.M. type label; '197. RHYPAROCHROMUS PUSILLUS,'. Glued to card. Present combination *Pachybrachius pusillus* (Dallas).

putoni (**Calyptonotus**) Saunders, 1876a: 221. Holotype ♂ with labels: circular red B.M. type label; 'Putoni E.S. Type'; 'Algeria'. Glued to card; terminal three segments of both antennae, left fore tibia and tarsus, left hind leg, right fore and middle tibia and tarsus and right hind leg missing. Synonym of *Raglius pineti* (Herrich-Schaeffer, 1835).

putoni (**Scolopostethus**) White, 1878a: 75. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Scolopostethus Putoni B.W.'; 'New Zealand'; 'Pres. by Perth Museum B.M. 1953—629'. Glued to card; last two segments of left antenna, all of right antenna, left hind leg and right hind tibia and tarsus missing. Present combination *Brentiscerus putoni* (White).

raja (**Aphanus**) Distant, 1906a: 415. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Kuching Dec 1905 JH'; '123'; 'Aphanus raja Dist. type' [Distant's handwriting]; 'Distant Coll. 1911—383.'. Pinned through abdomen; end segment of both antennae and right hind leg missing. Synonym of *Neolethaeus descriptus* (Walker, 1872).

reductus (**Plociomerus**) Walker, 1872a: 120. LECTOTYPE ♀ (not ♂) with labels: circular green B.M. type label; '34. PLOCIOMERUS REDUCTUS.' Glued to card, with data 'Wright' and two undetermined words on underside; left antenna missing. Present combination *Pachybrachius reductus* (Walker).

***relatus* (*Dieuches*)** Distant, 1901*b*: 505. LECTOTYPE ♂ with labels: circular red B.M. type label; 'relatus Dist.' [Distant's handwriting]; 'Umfili R. Mashonaland (Guy Marshall)'; 'Distant Coll. 1911—383.' Pinned through scutellum and mounted on polyporus strip; in poor condition with left antenna, end two segments of right antenna, left fore and hind legs, right middle and hind legs missing; head and pronotum partly detached from rest of body.

***repressus* (*Rhyparochromus*)** Walker, 1872*a*: 104. Holotype with labels: circular green B.M. type label; 'Mak'; 'Celeb Wallace'; 'Saunders. 65.13.'; '172. RHYPAROCHROMUS REPRESSUS.' Pinned through scutellum and mounted on polyporus strip; head and thorax only present; end three segments of left antenna, end segment of right antenna and all legs missing. Synonym of *Pachybrachius nietneri* (Dohrn, 1860).

***reticulatus* (*Atkinsonianus*)** Distant, 1909*c*: 344. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Atkinsonianus reticulatus Dist. type' [Distant's handwriting]; 'Sikkim'; 'Atkinson Coll. 92—6.' Pinned through scutellum and mounted on card; legs and antennae missing.

***rolandri* (*Naudarensia*)** Distant, 1918*b*: 492. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Naudarensia rolandri Dist. type' [Distant's handwriting]; 'S.W. Australia. Yallingup. Nov. 1913. R. E. Turner. 1914—190.' Glued to card point; end three segments of both antennae, and right middle leg missing. Present combination *Udeocoris rolandri* (Distant).

***rudolfianus* (*Lachnophoroides*)** Distant, 1918*b*: 262. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Lachnophoroides rudolfianus Dist. type' [Distant's handwriting]; 'Soudan. Kaig. 9.iii.04. C. Singer. 1906–78.'; '1911—177.' Pinned through scutellum and mounted on polyporus strip; in poor condition, with both antennae, all legs on left, and right middle leg missing. Present combination *Dieuches rudolfianus* (Distant).

***rufocinctus* (*Aphanus*)** Distant, 1901*b*: 501. LECTOTYPE ♂ with labels: circular red B.M. type label; 'rufocinctus Dist.' [Distant's handwriting]; 'Perim I. 90–106.' Glued to card to right of a female. Synonym of *Liolobus pallidicornis* Reuter, 1891. **Syn. n.**

***rusticus* (*Diplonotus*)** Scott, 1874*a*: 430. LECTOTYPE ♀ with labels: circular red B.M. type label; 'JAPAN'; 'Diplonotus rusticus, n. sp.' Glued to card. Present combination *Pachybrachius rusticus* (Scott).

***sanguineus* (*Calyptonotus*)** Douglas & Scott, 1868*b*: 28. LECTOTYPE ♀ with labels: circular red B.M. type H.T. label; 'Sanguineus Type D.S.'; 'Saunders Coll. Brit. Mus. 1910—357.' Pinned through pronotum, right hind tibia and tarsus missing. Present combination *Rhyparochromus phoeniceus sanguineus* (Douglas & Scott).

***scotti* (*Pamera*)** Distant, 1901*b*: 479. New name for *Diplonotus luridus* Scott 1874, which is preoccupied. Present combination *Pachybrachius scotti* (Distant).

***scutellatus* (*Dieuches*)** Distant, 1904*c*: 268. LECTOTYPE ♀ with labels: circular red B.M. type label; 'scutellatus Dist.' [Distant's handwriting]; 'Townsville, Qld. 14.5.03 F. P. Dodd'; '1904–27.' Glued to card with a ♂ specimen above.

***scutellatus* (*Rhyparochromus*)** Dallas, 1852*a*: 575. LECTOTYPE ♂ with labels: circular red B.M. type label; 'North Amer'; '100. RHYPAROCHROMUS SCUTELLATUS,'. Glued to card to left of another ♂ specimen; end three segments of right antenna missing. Present combination *Pachybrachius bilobatus scutellatus* (Dallas).

***scutellatus* (*Udalricus*)** Distant, 1904*a*: 49. Lectotype in Genoa, designated by Scudder (1966).

***segmentata* (*Bedunia*)** Distant, 1901*b*: 479. LECTOTYPE ♀ with labels: circular red B.M. type label; 'segmentata Dist.' [Distant's handwriting]; 'PERAK, DOHERTY'; 'Distant Coll. 1911—383.' Pinned through scutellum and in poor condition; right antenna, right fore leg, left middle and hind leg, much of right middle and hind legs missing; abdomen dissected.

***semidolens* (*Rhyparochromus*)** Walker, 1870*a*: 2378. Not located in the collections.

***semilucens* (*Rhyparochromus*)** Walker, 1872*a*: 99. Holotype ♀ with labels: circular green B.M. type label; 'North Ind'; 'Saunders. 65.13.'; '156. RHYPAROCHROMUS SEMILUCENS.' Pinned through scutellum and mounted on polyporus strip; left antenna oligomerous; end segment of right antenna and left middle tarsus missing. Synonym of *Lachnesthus singalensis* (Dohrn, 1860).

***serripes* (*Rhyparochromus*)** Walker, 1872*a*: 92. Holotype ♂ (not ♀) with labels: 'PETROPILIS Feby 1857. J. Gray'; '117. RHYPAROCHROMUS SERRIPES.' Glued to card; right hind leg missing.

***sevosus* (*Dinia*)** Distant, 1901*b*: 497. LECTOTYPE ♂ with labels: circular red B.M. type label; 'sevosus Dist.' [Distant's handwriting]; 'Ceylon (Lewis)'; 'Distant Coll. 1911—383.' Glued to card, with data '12 12. 87' on underside. Present combination *Diniella sevosa* (Distant).

***seychellesus* (*Plociomerus*)** Walker, 1872*a*: 120. LECTOTYPE ♀ with labels: circular green B.M. type label; '33. PLOCIOMERUS SEYCHELLESUS.' Glued to card, with data 'Round Is. 70 46' on underside. Synonym of *Paromius gracilis* (Rambur, 1839).

***siamicus* (*Rhyparochromus*)** Walker, 1872*a*: 102. Holotype ♀ (not ♂) with labels: circular green B.M. type label; 'Siam'; 'Saunders. 65.13.'; '163. RHYPAROCHROMUS SIAMICUS.' Pinned through pronotum and mounted on polyporus strip; end segment of both antennae, left middle leg missing; specimen covered in fungal hyphae. Present combination *Dieuches siamicus* (Walker).

***signanda* (*Salacia*)** Distant, 1903*c*: 46. LECTOTYPE ♀ with labels: circular red B.M. type label; 'signanda Dist.' [Distant's handwriting]; 'Green Ceylon'; 'Distant Coll. 1911—383.' Glued to card point; last two segments of left antenna and left hemielytron missing. Present combination *Botocudo signanda* (Distant). **Comb. n.**

***signatus* (*Lethaeus*)** Distant, 1901*b*: 506. LECTOTYPE ♀ with labels: circular red B.M. type label; 'signatus Dist.' [Distant's handwriting]; 'Ceylon'; 'Distant Coll. 1911—383.' Pinned through pronotum and mounted on card; left antenna, end segment of right antenna, right middle and hind leg missing. Present combination *Neolethaeus signatus* (Distant). **Comb. n.**

***simpsoni* (*Lethaeus*)** Bergroth, 1912*d*: 195. LECTOTYPE with labels: circular red B.M. type H.T. label; 'Badagri S. Nigeria. J. J. Simpson. 1910—213. 1—2—10'; 'Lethaeus simpsoni Bergr.' [Bergroth's handwriting]; '1914–65.' Pinned through scutellum and mounted on card; end three segments of left antenna, right fore tibia and tarsus, wings and abdomen missing. Synonym of *Lethaeus africanus* Dallas, 1852. **Syn. n.**

***simulans* (*Tropistethus*)** Distant, 1906*a*: 414. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Tropistethus simulans Dist. type' [Distant's handwriting]; 'Peradeniya, Ceylon, 3—05'; 'Distant Coll. 1911—383.' Pinned through scutellum from below and mounted on polyporus strip. Present combination *Lamproceps simulans* (Distant).

***sladeni* (*Pamera*)** Distant, 1913*a*: 152. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Pamera sladeni Dist. type' [Distant's handwriting]; 'Silhouette, '08. Seychelles Exp.'; 'Percy Sladen Trust Expedition. 1911—497.' Glued to card; right antenna missing; card with number '29'. Present combination *Pachybrachius sladeni* (Distant).

***sloggetti* (*Dieuches*)** Distant, 1918*b*: 267. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Dieuches sloggetti Dist. type' [Distant's handwriting]; '6—3—02 Deelfontein C.C.'; 'Deelfontein S.A. Col. Sloggett. 1903—109.' Glued to card point; end segment of left antenna, right antenna, left fore and hind leg, right middle and hind leg missing.

***smithi* (*Dieuches*)** Distant, 1918*b*: 267. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Dieuches smithi Dist. type' [Distant's handwriting]; 'Dr. Smith. S. Afr. 44–6'; 'Rhyparochromus armipes. Walker's Catal.' Pinned through scutellum and in poor condition; end segment of left antenna, right antenna, left fore and hind legs, middle right leg and all tarsi missing.

***sobrina* (*Pamera*)** Distant, 1901*b*: 480. LECTOTYPE ♂ with labels: circular red B.M. type label; 'sobrina Dist.' [Distant's handwriting]; 'Calcutta'; 'Atkinson Coll. 92–6.' Glued to card with an additional male to left and a female abdomen to right; right antenna missing. Present combination *Remaudiereana sobrina* (Distant).

***socia* (*Bathydema*)** Uhler, 1893*c*: 710. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Bathydema socia Uhler' [Uhler's handwriting]; 'Soufriere volcano. Apr. 3000 ft. In moss.'; 'St. Vincent'; '95–206'. Glued to card point; end segment of both antennae missing.

***sparsus* (*Aphanus*)** Distant, 1904*a*: 81. LECTOTYPE ♀ with labels: circular red B.M. type label; 'sparsus Dist.' [Distant's handwriting]; 'Bor Ghat Dixon'; 'Distant Coll. 1911—383.' Glued to card point. Present combination *Rhyparothesus sparsus* (Distant). **Comb. n.**

***spinosus* (*Gonsalvus*)** Distant, 1909*c*: 344. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Gonsalvus spinosus Dist. type' [Distant's handwriting]; 'at light Calcutta 10–XI–07. Mus. Coll.'; 'Distant Coll. 1911—383.' Pinned through scutellum and mounted on polyporus strip; end segment of both antennae and left fore leg missing. Present combination *Proderus spinosus* (Distant).

***splendens* (*Scythinus*)** Distant, 1893*a*: 405. Holotype ♂ with labels: circular red B.M. type label; circular green B.M. type label; 'Scythinus splendens Dist.' [Distant's handwriting]; 'V. de Chiriqui, 25–4000 ft. Champion.'; 'Sp. figured.' Glued to card; left hind leg missing; abdomen dissected.

***splendens* (*Speusippas*)** Distant, 1901*b*: 499. Not traced in the collections.

***stali* (*Targarema*)** White, 1878*a*: 73. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Targarema Stali B.W. TYPE'; 'N. Zealand Broun'; 'Pres. by Perth Museum. 1953—629.' Glued to card on right of a male specimen.

***staphylinus* (*Pachymerus*)** Rambur, 1839*a*: 154. LECTOTYPE ♂ with green label: 'Pachymerus staphilinus'. Glued to card point; head, pronotum and right middle leg missing. Present combination *Piezoscelis staphylinus* (Rambur).

***stellatus* (*Lethaeus*)** Distant, 1913*a*: 155. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Lethaeus stellatus Dist. type' [Distant's handwriting]; 'Aldabra, '08–9. J. C. F. Fryer.'; 'Percy Sladen Trust Expedition. 1911—497.' Glued to card, with the number '308'; end segment of left antenna and tarsi of both hind legs missing.

***strictus* (*Rhyparochromus*)** Walker, 1872*a*: 108. This species belongs in the Heterogastrinae.

***suratensis* (*Aphanus*)** Distant, 1909*c*: 338. LECTOTYPE with labels: circular red B.M. type label; 'Aphanus suratensis Dist. type' [Distant's handwriting]; 'Surat Bombay'; 'Distant Coll. 1911—383.' Micropinned through metathorax and mounted on polyporus strip; in poor condition with end segment of left antenna, end two segments of right antenna, abdomen and all legs (except left front) missing. Present combination *Dieuches suratensis* (Distant).

***tartarea* (*Lua*)** Distant, 1909*c*: 343. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Lua tartarea Dist. type' [Distant's handwriting]; 'Nolanda Ceylon. x–06'; 'S. India. E. A. Butler. 1915–60.' Micropinned from below and mounted on polyporus strip; right fore leg missing. Present combination *Diniella tartarea* (Distant).

***tenebrosus* (*Lethaeus*)** Distant, 1914*b*: 382. LECTOTYPE ♀ with labels: circular yellow B.M. Cotype label; 'Lethaeus tenebrosus Dist. Cotype.' [Distant's handwriting]; 'Oubatche, N. Caledonia Sept. 1911'; 'Distant Coll. 1911–383.'. Pinned through scutellum; end two segments of left antenna, and end three segments of right antenna missing. Present combination *Neolethaeus tenebrosus* (Distant).

***terminalis* (*Gastrodes*)** Walker, 1872*a*: 122. Holotype ♀ with labels: circular green B.M. type label; 'Mak 43'; 'GASTRODES TERMINALIS.'; 'Saunders. 65.13.' Glued to card. Synonym of *Clerada apicicornis* (Signoret, 1863).

***terminalis* (*Rhyparochromas*)** Walker, 1872*a*: 105. Holotype ♀ with labels: circular green B.M. type label; 'Cer.'; 'Saunders. 65.13.'; '173. RHYPAROCHROMUS TERMINALIS.'

Pinned through scutellum and mounted on polyporus strip; end three segments of both antennae and all legs on right side, missing. Synonym of *Narbo biplagiatus* (Walker 1871).

***testaceipes* (*Rhyparochromus*)** Walker, 1872*a*: 101. Holotype ♀ with labels: circular green B.M. type label; 'Ceylon 60 34'; 'R. testaceipes W. type' [Walker's handwriting]; '160. RHYPAROCHROMUS TESTACEIPES.' Glued to card point, but previously has been pinned through pronotum; end two segments of left antenna, end segment of right antenna, middle left tarsus, left hind leg, right hind tibia and tarsus missing; right fore leg detached and glued to card point beside specimen. Synonym of *Dieuches punctipes* Dohrn, 1860.

***thoracica* (*Pamera*)** Distant, 1901*b*: 481. LECTOTYPE ♀ with labels: circular red B.M. type label; 'thoracica Dist.' [Distant's handwriting]; 'Peak Downes'; 'Distant Coll. 1911—383.' Glued to card; end segment of left antenna and end three segments of right antenna missing. Present combination *Pachybrachius thoracicus* (Distant).

***thoracicus* (*Neocattarus*)** Distant, 1893*a*: 403. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Neocattarus thoracicus Dist.' [Distant's handwriting]; 'Bugaba, Panama. Champion.'; 'Sp. figured.'; and the B.C.A. label. Glued to card.

***tibialis* (*Polycrates*)** Distant, 1918*a*: 194. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Polycrates tibialis Dist. type' [Distant's handwriting]; 'Chikkaballapura, S. India. T. V. Campbell'; 'L41'; 'S. India. E. A. Butler. 1915–60.' Glued to card; antennae missing and most legs detached.

***tineoides* (*Lamprodema*)** Distant, 1901*b*: 500. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Lamprodema tineoides Dist.' [Distant's handwriting]; 'Ceylon (Lewis)'; 'Distant Coll. 1911—383.' Glued to card. Present combination *Plinthisus tineoides* (Distant).

***trabeatus* (*Dinia*)** Distant, 1901*a*: 498. LECTOTYPE ♀ with labels: circular red B.M. type label; 'trabeatus Dist.' [Distant's handwriting]; 'Nagpur Atkinson.'; 'Distant Coll. 1911—383.' Glued to card point; end three segments of left antenna, right antenna, right middle and hind leg missing. Present combination *Lamproceps trabeatus* (Distant).

***tricolorata* (*Pamera*)** Distant, 1918*b*: 489. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Pamera tricolorata Dist. type' [Distant's handwriting]; 'N. Queensland. Kuranda, 1,100 ft. May 3–June 20, 1913. R. E. Turner. 1913—438.' Glued to card point; antennae missing. Synonym of *Pachybrachius nietneri* (Dohrn, 1860).

***trimaculatus* (*Trapezus*)** Distant, 1882*a*: 217. LECTOTYPE ♀ with circular red B.M. type label; 'Trapezus trimaculatus Dist.' [Distant's handwriting]; 'Guatemala City, 9000 ft. Champion.'; and the B.C.A. label. Glued to card; end segment of both antennae missing; hind legs partly detached and abdomen dissected. Present combination *Cryphula trimaculata* (Distant).

***tropicus* (*Eremocoris*)** Distant, 1882*a*: 218. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Eremocoris tropicus Dist.' [Distant's handwriting]; 'Quiche Mts., 7–9000 ft. Champion.' Glued to card; end segment of both antennae and left middle leg missing. Present combination *Scolopostethus tropicus* (Distant).

***turneri* (*Austropamera*)** Distant, 1918*b*: 490. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Austropamera turneri Dist. type' [Distant's handwriting]; 'N. Queensland. Kuranda, 1,100 ft. May 3–June 20, 1913. R. E. Turner. 1913—438.' Glued to card point; end segment of left antenna and left hind tarsus missing; abdomen in a vial. Present combination *Bedunia turneri* (Distant).

***typicalis* (*Laxamana*)** Distant, 1906*a*: 416. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Laxamana typicalis Dist. type' [Distant's handwriting]; 'Kuching Dec 1905 JH'; '2'; 'Distant Coll. 1911—383.' Pinned through thorax and mounted on card; end segment of both antennae missing. Synonym of *Narbo longipes* (Stål, 1867).

***typicus* (*Gonatas*)** Distant, 1882: 219. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Gonatas typicus Dist.' [Distant's handwriting]; 'Bugaba, 800–1500 ft. Champion.'; and the B.C.A. label. Glued to card on right of another female specimen. Present combination *Gonatoides typicus* (Distant).

***typicus* (*Neolethaeus*)** Distant, 1909*c*: 340. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Neolethaeus typicus Dist. type' [Distant's handwriting]; 'Palon (Pegu) L. Fea. VIII.IX–87'; 'Distant Coll. 1911—383.' Glued to card; end two segments of both antennae, left hind leg, right hind tibia and tarsus missing; abdomen dissected.

***typicus* (*Orbellis*)** Distant, 1913*a*: 156. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Orbellis typicus Dist. type' [Distant's handwriting]; 'Mahe'; 'Percy Sladen Trust Expedition. 1911—497.' Glued to card with number '79'.

***typus* (*Gonsalvus*)** Distant, 1904*a*: 93. Lectotype in Genoa, designated by Scudder (1966). Present combination *Proderus typus* (Distant).

***ugandensis* (*Abanus*)** Distant, 1918*b*: 269. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Abanus ugandensis Dist. type' [Distant's handwriting]; 'Entebbe, Uganda. Aug. 1912. C. A. Wiggins.' Pinned through scutellum; right antenna missing. Present combination *Dieuches ugandensis* (Distant).

***uhleri* (*Rhaptus*)** Distant, 1901*b*: 189. LECTOTYPE ♀ with labels: circular red B.M. type label; 'uhleri Dist.' [Distant's handwriting]; '100'; 'S. 289'; 'Mount Gay Est. (Leeward side) Grenada, W.I. H. H. Smith.'; '61'; '95–206'. Glued to card point; end segment of left antenna and legs on left side (except middle femur) missing. Present combination *Bubaces uhleri* (Distant). **Comb. n.**

***umbrosis* (*Dorachosa illuminatus*)** Distant, 1893*a*: 409. Lectotype ♂ with labels: 'Boll Texas 1875'; 'Distant Coll. 1911—383' Pinned through scutellum; end segment of right antenna missing.

This Texas specimen is not conspecific with the other type material from Guatemala and Panama. Slater and Ashlock (1966) have considered the identity of this material and have designated the lectotype. Present combination *Atrazonotus umbrosus* (Distant).

***uniformis* (*Dieuches*)** Distant, 1904*a*: 84. LECTOTYPE ♀ with labels: circular red B.M. type label; 'uniformis Dist.' [Distant's handwriting]; 'Yatiyantota, Ceylon 3.1902' Glued to card; end segment of left antenna, end two segments of right antenna and right middle leg missing.

***uniformis* (*Polycrates*)** Distant, 1918*a*: 194. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Polycrates uniformis Dist. type' [Distant's handwriting]; 'Chikkaballapura, S. India. T. V. Campbell'; 'L41'; 'S. India. E. A. Butler. 1915–60.' Glued to card; end segment of right antenna missing.

***variabilis* (*Balboa*)** Distant, 1893*a*: 408. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Balboa variabilis Dist.' [Distant's handwriting]; 'Sp. figured.'; 'V. de Chirique, 2–3000 ft. Champion.'; and the B.C.A. label. Glued to card to left of another male.

***variegatus* (*Heraeus*)** Kirby, 1890*a*: 547. LECTOTYPE ♂ with labels: circular red B.M. type label; '01 88'; 'Heraeus variegatus Kb type'. Pinned through pronotum and mounted on card; end segment of both antennae missing. Present combination *Ozophora variegata* (Kirby). **Comb. n.**

***variegatus* (*Poeantius*)** Distant, 1918*b*: 268. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Poeantius variegatus Dist. type' [Distant's handwriting]; 'Nr. Chirinda Forest. Gaza L'd. Mch '07. G. A. K. Marshall. 1908—212.' Pinned through scutellum and mounted on card; end segment of left antenna, end three segments of right antenna, left hind leg and right middle leg missing. Synonym of *Poeantius nigropictus* (Stål, 1855). **Syn. n.**

***vegetus* (*Neocattarus*)** Distant, 1882*a*: 214. LECTOTYPE ♀ with labels: circular red B.M. type label; 'Neocattarus vegetus Dist.' [Distant's handwriting]; 'Bugaba, 800–1500 ft. Champion.'; and the B.C.A. label. Glued to card; end segment of left antenna missing.

***vicinalis* (*Pamera*)** Distant, 1882*a*: 207. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Pamera vicinalis Dist.' [Distant's handwriting]; 'Chiacaman, Vera Paz. Champion.'; and the B.C.A. label. Glued to card of left of a female specimen. Present combination *Pachybrachius vicinalis* (Distant).

***vicinus* (*Rhyparochromus*)** Dallas, 1852*a*: 576. LECTOTYPE ♀ with labels: circular red B.M. type label; 'N. Am'; '27'; '101. RHYPAROCHROMUS VICINUS,' Pinned through scutellum; both antennae, both fore legs, left middle leg and right hind leg missing. Synonym of *Ligyrocoris sylvestris* (Linnaeus, 1758).

***vigens* (*Neocattarus*)** Distant, 1882*a*: 214. LECTOTYPE ♀ with labels: circular red B.M. type label; 'vigens Dist.' [Distant's handwriting]; 'S. Geronimo, Guatemala. Champion.'; and the B.C.A. label. Glued to card.

***vitalisi* (*Pamera*)** Distant, 1918*c*: 242. LECTOTYPE ♂ with labels: circular red B.M. type label; 'vitalisi Dist. type' [Distant's handwriting]; 'Indo-China. Kompong Kedey, V. R. de Salvaza. 1917–98.' Glued to card; end two segments of left antenna and all legs (except right middle) missing. Present combination *Pachybrachius vitalisi* (Distant).

***vittata* (*Lamprodema*)** Distant, 1901*b*: 500. LECTOTYPE ♀ with labels: circular red B.M. type label; 'vittata Dist.' [Distant's handwriting]; '5219'; 'Parry Harbour. C. Bougainville. 92–1.' Present combination *Telocoris vittata* (Distant).

***vivida* (*Pamera*)** Distant, 1882*a*: 208. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Pamera vivida Dist.' [Distant's handwriting]; 'S. Geronimo, Guatemala. Champion.'; and the B.C.A. label. Glued to card. Present combination *Pachybrachius vividus* (Distant).

***walkeri* (*Calyptonotus*)** Saunders, 1876*a*: 221. LECTOTYPE ♂ with labels: circular red B.M. type label; 'Walkeri Type ES' [Saunders' handwriting]; 'Malta Walker'; 'Saunders Coll. Brit. Mus. 1910—357.' Glued to card; left hind leg missing. Present combination *Liolobus walkeri* (Saunders).

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APPENDIX

List of Rhyparochrominae holotypes in British Museum (Nat. Hist.) not considered in this paper.

acanthothorax (*Plinthisus* (*Plinthisus*)) Kiritshenko, 1931*a* : 375.
aeneiventris (*Trapezonotus*) Kiritshenko, 1931*a* : 377.
annulicornis (*Eucosmetus*) Kiritshenko, 1931*a* : 372.
ashanti (*Botacudo*) [*sic*] Southwood, 1963*a* : 172. Present combination *Botocudo ashanti* Southwood.
cephalotes (*Orthaea*) Kiritshenko, 1931*a* : 373. Present combination *Stigmatonotum cephalotes* (Kiritshenko).
distanti (*Naudarensia*) Kiritshenko, 1931*a* : 380.
garnhami (*Harmosticana*) Miller, 1957*a* : 206. Present combination *Pholeolygaeus garnhami* (Miller).
insignis (*Ruavatua*) Miller, 1956*b* : 655.
longicornis (*Bryanella*) China, 1930*b* : 136. Present combination *Bryanellocoris longicornis* (China).
maculatus (*Locutius*) Kiritshenko, 1931*a* : 376. Present combination *Plinthisus maculatus* (Kiritshenko).
melleus (*Hexatrichocoris*) Kiritshenko, 1931*a* : 379.
minuta (*Clerada*) China, 1924*b* : 435. Synonym of *Reclada moesta* White, 1878.
minuta (*Retoka*) China, 1935*a* : 302.
mungus (*Lethaeus*) Scudder, 1958*b* : 139. Synonym of *Neolethaeus tenebrosus* (Distant, 1914).
myrmecoides (*Aegyptocoris*) China, 1936*a* : 165.
puberula (*Orthaea*) China, 1930*b* : 131. Present combination *Pachybrachius puberulus* (China).
quadratus (*Appolonius*) Scudder, 1956*b* : 359.
rennellensis (*Cligenes*) Scudder, 1958*b* : 140. Present combination *Botocudo rennellensis* (Scudder). **Comb. n.**
rodriguezensis (*Lachnesthus*) China, 1925*c* : 163.
sikkimensis (*Lachnodrymodes*) Kiritshenko, 1931*a* : 382. Present combination *Trichodrymus sikkimensis* (Kiritshenko).
slateri (*Drymus*) Southwood, 1963*a* : 172.
snelli (*Lethaeus*) China, 1924*b* : 434.
swezeyi (*Cligenes*) China, 1930*b* : 138. Present combination *Botocudo swezeyi* (China). **Comb. n.**
swezeyi major (*Cligenes*) China, 1930*b* : 139. Present combination *Botocudo swezeyi major* (China). **Comb. n.**
typica (*Chotekia*) China, 1935*a* : 300.
ventralis (*Orthaea*) China, 1930*b* : 130. Present combination *Pachybrachius ventralis* (China).
wollastoni (*Microthisus*) Lindberg, 1958*c* : 66.

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Pp. 287–327

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TRUSTEES OF
THE BRITISH MUSEUM (NATURAL HISTORY)

Issued 29 *September,* 1967 *Price Sixteen Shillings*

THE TYPES OF THE SCOLIIDAE DESCRIBED BY FREDERICK SMITH[1] (HYMENOPTERA)

WITH DESCRIPTIONS OF NEW TAXA, AND NOTES ON THE ORIENTAL LOCALITIES WHERE ALFRED RUSSEL WALLACE COLLECTED

By J. CHESTER BRADLEY and J. G. BETREM

IN 1926 J. G. Betrem spent a few days at the British Museum and at Oxford intensively studying the type-material of Smith's Indo-Australian Scoliidae. The results were published in his great monograph of those wasps (1928). His frequent statement ' Hololectotype Smith's B.M. ' or ' Oxford ' was actually intended, in many cases, to serve as equivalent to a selection of lectotype, but we are agreed that it is insufficient to meet all the technicalities of lectotype selection, and in this paper we have tried to make clear the status of individual specimens as holotypes or lectotypes, following Betrem's original intent wherever another course is not clearly indicated. Betrem continued his study at Oxford in July, 1958, and subsequently, and at the British Museum on several subsequent dates up to and including August, 1966.

In the autumn of 1928 and in 1929 Bradley spent many months at the British Museum, and a period at Oxford, working on Scoliidae, and giving particular attention to the study of types. He placed red holotype or lectotype labels on many of Smith's, Cameron's and Kirby's specimens.

Frederick Smith was born in London in 1805. As a boy he was a close friend of W. E. Shuckard, who, himself developing a taste for entomology, introduced his companion to its pleasures. Smith became a professional engraver. From about 1841 to 1850 he held the post of Curator of the Collections and Library of the Entomological Society of London. Then he became Assistant Keeper of Insects in the British Museum. Up to this time, Smith's numerous papers (Horn and Schenkling list 150 up to 1863) were mostly on bees or ants, but thereafter he broadened his field to include aculeate Hymenoptera in general with a few papers on beetles. Although often thought of as only a museum taxonomist, we are told that Smith had in reality an extensive field knowledge of British aculeate Hymenoptera. He died in London in 1879, in his 74th year.

Dr M. W. R. de Vere Graham, curator of insects in the Oxford Museum, has prepared and sent to us through courtesy of Professor G. C. Varley, the following statement concerning Scoliidae in that institution:

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[1] This paper was completed with aid of a grant from the National Science Foundation of the U.S.A.

'The collections of Hymenoptera made by Alfred Russel Wallace in the eastern part of Indonesia and in New Guinea passed (at least mainly) into the hands of W. W. Saunders.[2] They form the entire substance of the series of papers subsequently published by Frederick Smith in the Journal of the Linnean Society. This material is now divided between the British Museum (Natural History) and the Hope Department of the Oxford University Museum. The old museum collection of the latter institution (Hope-Westwood collection) also contains Scoliidae, including Gray's type of *Scolia fulva*, and some species given manuscript names by Westwood; another, the Rottney collection, contains Scoliidae studied by Cameron '.

' It is clear that in some cases, syntypes of a particular species may exist both in the B.M. and in the Hope Department; such cases must be examined individually in order to decide on a lectotype.'

Before selecting a lectotype Bradley has endeavoured to locate each syntype, wherever located, and to select the one that is most suitable to become lectotype, taking into account its sex, its conformity with the original description, its locality of capture, and the collection in which it is located; also whether Betrem, 1928, intended to make a selection.

[I have found two more places in the literature which confirm that the Wallace insect-collections, except the Coleoptera, were the property of W. W. Saunders.

I. Wallace stated in the introduction to his book *The Malay Archipelago* (4th ed., 1872 : VIII): ' The remaining orders of insects . . . are in the collection of Mr. William Wilson Saunders . . . The Hymenoptera alone amounted to more than nine hundred species . . . '

II. Smith (1862 : 36) wrote: ' Many fine additions of the Aculeata are contained in the present collections which are the property of William Wilson Saunders, Esq.'

It seems reasonable to me that Smith sent back to Saunders the specimens that we now consider as typical (syntypes) and that he retained the duplicates. Therefore we must select lectotypes in the first place from the Wallace material in the Saunders collection. It follows that a lectotype may be selected from the duplicates in the British Museum only if it can be demonstrated that there is no material that accords with the description in the Saunders collection.

It has been assumed that all the material that Wallace collected is either in the museum at Oxford or in the British Museum. Therefore I was greatly astonished to find some Wallace material in New York in the collection of the American Museum of Natural History when I restudied their scoliid collection in December, 1965. A female of *Scolia apicata* and a specimen of *Scolia dimidiata* are there. The former is probably type of the species. Furthermore there is a syntype of *Scolia zonata*, a species that Smith described from the British Museum collection. All three were derived from the collection of J. Angus that was obtained by the American Museum many years ago. That gentleman was an old-timer who had a large private collection. He exchanged material with entomologists all over the world. Very likely he obtained this material from the British Museum, possibly through Smith. It is not at all probable that he exchanged with the museum at Oxford, because one of the species, *Scolia zonata*, definitely comes from the British Museum.

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[2] The evidence for this is contained in *Jour. Proc. Linn. Soc.* (Zool.) 1857, **1** : 4 where Saunders states ' A large portion of Mr. Wallace's entomological collections pass into my hands ' . . . Saunders further states that he asked Francis Walker to catalogue the Diptera ; presumably, in the same way, he must have asked Smith to deal with the Hymenoptera.

[Smith, 1861 : 94 wrote ' This fine collection is the property of W. W. Saunders ', a note which may indicate that the other Wallace material was also Saunders' property. In the paper in question he described *Scolia culta*, *morosa*, and *ducalis* as new. The following entries in the accessions book of the British Museum show that some of the material collected by Wallace was sold to Stevens : ' $\frac{56}{44}$. 11 April, purchased from Stevens, coll. by Alfred Wallace, 75 Hym., plus many other insects ', and ' $\frac{62}{91}$ from Salawaty of New Guinea, purchased of Stevens, coll. by A. R. Wallace '.

Horn (1926, *Suppl. Ent.* **12** : 107) stated that the Hymenoptera of the W. W. Saunders collection went to the Hope Museum via J. O. Westwood, which is certainly not, in general, true. J.G.B.]

In describing the majority of his oriental species, Smith has stated that the material is in the Saunders collection.

There are many indications (see, e.g. *S. indica*, *ignita*, *erratica*, and *fasciatopennis*) that Smith studied the older material of the Museum at Oxford before he wrote the scoliid portion of his Catalogue of the hymenopterous insects in the collection of the the British Museum. It is not improbable that some of his types were originally part of the material in the Oxford Museum. J.G.B.]

[*Notes on the localities where Wallace or Allen collected in the East Indies*

Smith wrote the following two lists dealing with the distribution of the Hymenoptera that are of interest to us:

I. Notes on the geographical distribution of the aculeate Hymenoptera collected by Mr A. R. Wallace in the Eastern Archipelago (1863). This list gives more localities than the second one, but does not contain the localities mentioned in Smith's 1864 paper.

II. A catalogue of the Aculeate Hymenoptera and Ichneumonidae of India and the Eastern Archipelago, with introductory remarks by A. R. Wallace (1870).

The introduction by Wallace is important because of its biological notes. The list of localities of the scoliids is very incomplete. In this paper Smith followed the system of the catalogue of de Saussure & Sichel and accepted *Elis*, now *Campsomeris*, as a good genus.

More peculiarities about the localities where Wallace collected may be found in the second list and in his book: *The Malay Archipelago* (1st ed., 1869).

Wallace did not himself visit all of the localities from where material in his collection came. Many were visited only by his assistant Charles Allen, especially many of the islands in the Moluccas. I have indicated the localities which were visited especially by the latter.

Singapore. Wallace collected especially in the central hills where primary forests still existed.

Penang. This island was not mentioned by Wallace in his publications. It seems that he or Allen collected there during the journey to or from the Malay Archipelago.

Malacca. This is a country in the south-eastern portion of Malaya. Almost all the collecting was done on Mount Ophir; cf. Smith, 1857.

Borneo. Wallace collected there only in the south-western portion of what is now called Sarawak. The town of Sarawak, which he mentioned, is Kutching (Koetjong). The different localities are not indicated on the labels.

Sumatra. Wallace collected in the residency Palembang, mostly along the river Ogan, probably near the present Batu Radjah.

Java. Wallace collected in east Java mostly in the village of Djapanan near Wonosalam in the district of Bareng, according to his map near Modjo-Agung. This locality is not on the slopes of Mt Ardjuno as he stated, but on the slopes of Mt Welirang.

In west Java, Wallace collected mostly on Mt Megamedong on Pundjakpas, at 4,500 ft, 20 miles south-east of Bogor (Buitenzorg).

Bali. Wallace collected at Bileling (Buleleng).

Lombok. Collecting was done by Wallace at Ampenan and Labuan Tring.

Flores. Allen collected here, not Wallace.

Timor. Wallace collected at Coupang (Kupang) in the Indonesian half and at Delli (Dilly) in the Portuguese portion.

Celebes. Wallace visited this island three times, the first time from September to November, 1856. He collected at Makassar and the district Goah, east of Makassar. Smith reported about this collection in 1858.

The second time Wallace was in the Celebes was from July to September, 1857; he collected then at Maros, 30 miles north of Makassar. Smith enumerated the collected species in his paper of 1861. No scoliids were caught. It seems that all specimens were labelled Makassar.

The third time Wallace collected in the north of Celebes in the country called Minahassa, from June to September, 1859. Menado or Tondano is written on the labels. Smith published about this collection in 1864.

Wallace himself collected on the *Banda* Islands, *Ambon, Buru, Goram, Martabello* (*Ceram Laut* Islands), *Waigiou* (*Waigeou*), *Ternate, Tidore, Makian, Kaisaa* (*Kaioa*), *Batchian* (*Batjan*), *Aru*-Islands and the *Key*-Islands.

Charles Allen collected on the *Sula*-Islands (Isle *Mangola*!), *Morty* (*Morotai*), *Mysol*, and *Salwatty* (*Salawaty*).

Both men collected on *Ceram.* The specimens labelled *Wahai* were perhaps collected by Allen. Both collected on *Gilolo.* The specimens recorded in the paper of 1864 by Smith were probably collected by Allen in north *Gilolo.*

Wallace and Allen both collected in *New Guinea.* Wallace's insects were labelled ' Dorey ', those of Allen probably: ' *New Guinea* '. They were collected in Sorong (*Mal. Arch.* : 571) one of most western localities on this island, and on a trip inland. The specimens collected by Allen were treated by Smith in his publications of 1863 and 1864. J.G.B.]

In his 1855 Catalogue, Smith printed ' B.M. ' in the margin if the museum contained specimens of a given species. But that does not necessarily mean type-material.

The serious error that can arise from abbreviated pin-labels is illustrated by Wallace's specimens from Makassar in the South Celebes, which, Betrem points out, are all labelled just ' Mak '. This was invariably interpreted by Betrem, 1928, to mean ' Makian ', an island in a region that is zoogeographically quite different. Since ' Makian ' was therefore erroneously published as the type-locality of a number of species in Betrem's monograph, corresponding corrections must be made.

Betrem states that in the Wallace material, according to the museum authorities, the locality-label was placed on the pin of only the first of a series of specimens from the same locality. This explains why we often encounter unlabelled syntypes.

Betrem & Bradley have considered all points in this paper, and are in agreement upon each. Where the manuscript has been written by Betrem it is followed by his initials and enclosed in square brackets. Bradley is author of the remainder. Betrem's manuscript was written at Ithaca, N.Y., in March, 1962, November, 1964, November, 1965, September, 1966 and in London in July, 1966. Bradley's manuscript was written much earlier.

The synonymies that follow the centre-headings are not complete bibliographies of the species. All of Smith's new names or nominal species and what is believed at the moment to be the correct formula for the taxonomic species involved, are entered. The latter are indicated by a preceding ' equals ' sign (=). In Palaearctic and Indo-Australian species, as well as African Campsomerinae, these have usually been determined by Betrem, and all such have been verified by him. In addition, references have been entered that indicate the origin of senior synonyms, or that indicate shifting generic or subgeneric position, as well as some others for special reasons.

In work in progress on the Scoliidae, Betrem will create certain new subgenera, and he, Mr C. Jacot Guillarmod and myself are agreed, that, in revising the classification of the family, certain taxa, heretofore ranked as subgenera, should be accorded full generic rank. These changes will have been published in a paper in press, it is hoped, before this paper appears.

Betrem proposed many years ago in a letter to me that *Austroscolia*, *Carinoscolia*, *Laeviscolia*, *Microscolia*, *Liacos*, and *Diliacos* should each be elevated to the status of genus. He accepted my representation that the time was not then ripe for such action. Since then we have learned so much more about the world fauna, especially the Ethiopian, that it is clear that in order properly to represent the taxonomy and zoogeography of the Scoliidae, Betrem's proposal should now be put into effect.

Betrem, 1967 : 25 has raised *Campsomeriella* to generic rank.

All new combinations of generic and specific names that appear in the list of species are to be accredited to Betrem.

[DESCRIPTIONS OF NEW GENERA AND SUBGENERA

Here follow the descriptions of one new genus and three new subgenera in order that their names may be used in the list of species that follows, without being *nomina nuda*.

CAMPSOMERINAE, tribe TRIELINI

GUIGLIANA gen. n.

Type-species: *Scolia aliena* Klug, 1835 = *Guigliana aliena* (Klug, 1835) **comb. n.**

♀. Anterior rim of the clypeus complete, not interrupted at the sides; disc of the clypeus usually not strongly elevated, but strongly elevated in one subgenus, with a semicircular marginal carina. No frontal cross-furrow above the spatium frontale; punctuation of the spatium frontale not extending beyond the upper end of the laminae frontales, as is the case in the genus

Campsomeris. Mesopleura with a distinct elevation below the forewings as in *Scolia.* Transition between the dorsal area and the vertical portions of the metapleura gradual. Three submarginal cells; two recurrent veins. First submarginal cell not setose. Black wasps, usually with black, but rarely with yellow-brown, vestiture.

♂. Quite like the female, almost no sexual dimorphism. .

Habitat: Ethiopian Region.

Tribe **CAMPSOMERINI**

CAMPSOMERIS

MEGAMERIS subgen. n.

Type-species: *Campsomeris mansuefacta* Bradley, 1931 = *Campsomeris* (*Megameris*) *soleata* (Gerstaecker, 1870).

♀. Front usually impunctate medially, short; carina occipitalis complete above. Transition between the dorsal and the vertical areas of the mesopleura not strongly elevated either medially or anteriorly, straight or almost straight; transition between the dorsal and the vertical areas of the metapleura sharp but not like a carina. First submarginal cell setose only above. Longer spur of tibia III usually very dark; acute, blunt, or rarely spatulate. Basal portion of the carina lateralis attaining the spiracles; transition between the area horizontalis lateralis and the area lateralis sharp, usually with a high carina that has a groove on the inner side. Basal tergites usually opaque, rarely more or less shining. Vestiture on the thorax often dense and long. Large to very large species.

♂. Spatium frontale densely punctate. Basal tergites usually with broad, yellow, apical bands that are strongly broadened medially in front. Volsellae very densely covered with long setae.

Habitat: Ethiopian Region.

This subgenus is allied to *Megacampsomeris* Betr., 1928 of the Indo-Australian Region.

MICROMERIS subgen. n.

Type-species: *Scolia marginella* Klug, 1805 = *Campsomeris* (*Micromeris*) *marginella marginella* (Klug, 1805).

♀. Front impunctate medially; carina occipitalis complete above; temporal groove absent. Transition between the dorsal and the vertical areas of the mesopleura gradual, somewhat elevated medially; transition between the dorsal and the vertical areas of the metapleura very gradual; upper plate of the metapleura impunctate. First submarginal cell bare, setose only along its upper margin. Area posterior medialis impunctate or with fine punctures; transition between the area horizontalis lateralis and the area lateralis rounded, without a distinct carina lateralis except for an apical indication; basal portion of the carina lateralis attaining the spiracles. Basal tergites opaque. Vestiture never entirely dark. Small species.

♂. Interspaces between the punctures of the spatium frontale larger than their diameters. Volsellae not densely setose.

Habitat: Ethiopian Region, Southern Palaearctic Region, Indo-Australian Region as far as, but not including, New Guinea.

PHALERIMERIS subgen. n.

Type-species: *Elis* (*Campsomeris*) *phalerata* Sauss., 1858 = *Campsomeris* (*Phalerimeris*) *phalerata* (Sauss., 1858).

♀. A group of deep punctures on the front before the anterior ocellus; temporal groove usually not deep but present; carina occipitalis usually more or less interrupted above. No shallow groove on the scapulae; transition between the dorsal and the vertical areas of the mesopleura not elevated medially, practically straight; transition between the dorsal and the vertical areas of the metapleura not gradual, sometimes almost without an edge, sometimes with a distinct edge, never like a carina. First submarginal cell setose in greater part. Spurs white, longer spur of tibia III blunt or acute, never spatulate. Basal portion of the carina lateralis attaining the spiracles. Basal tergites opaque. Vestiture usually in greater part brown-yellow. Tergites often with yellow apical bands.

♂. Area frontalis densely punctate. Scutellum and metanotum usually yellow. Paramera with an angular circumference.

Habitat: Indo-Australian Region including New Guinea and adjacent islands, but not Australia. J.G.B.]

THE LIST OF SPECIES

1. *agilis*

1859. *Scolia agilis* Smith, ♂ : 10. ' Hab. Celebes '.
1864. *Elis* (*Dielis*) *agilis* Saussure & Sichel, ♂: 203, n. 8.
1928. *Campsomeris leefmansi leefmansi* Betrem, ♀, ♂: 130, **syn. n.,** *teste* Betrem.
1928. *Campsomeris leefmansi problematica* Betrem, ♀: 131, **syn. n.,** *teste* Betrem.
1967. *Campsomeriella* (*Campsomeriella*) *agilis* Betrem, ♀ : 28.
= *Campsomeriella* (*Campsomeriella*) *agilis* (Smith) Betrem.

There is a male of *agilis* in the Saunders collection. It bears the pin-label ' Mak '. (Makassar, South Celebes) and also Smith's manuscript label ' *Scolia agilis* '. It was marked by Betrem ' lectotype '. Its palettes are exposed, and as Betrem's key stands it runs quite certainly to *manokwariensis* on p. 78, but this is without significance, since the males of related species cannot be distinguished, as Betrem notes below, and since the male that he described as *leefmansi* (actually *agilis*) is not included in his key.

[I referred in 1928 : 130, to the male from Makassar as holotype of *agilis* but placed it as the male of *C. micans bernsteini*, because I thought at that time that ' Mak. ' was an abbreviation of Makian. A second male came from Celebes and is in the British Museum. On p. 124 of the same work I referred to it as ' type of *agilis* Smith ', but queried it there as a probable synonym of *C. manokwariensis* Cam. My label ' lectotype ' on the specimen in the Oxford Museum is therefore correct, and its publication as ' holotype ' in my monograph must be correspondingly corrected. The males of the species of *Campsomeriella* in the eastern part of Indonesia cannot be distinguished from one another with certainty. They can be named only by the locality in which they were caught. The identity of the Celebes male in the British Museum therefore remains questionable. The only species that occurs in the South Celebes is *C. leefmansi* Betr., 1928. This name must now be replaced by *C. agilis* (Smith). The subspecies *problematica* that I described from the South Celebes, and the subspecies *leefmansi* that occurs in Eastern Java, must both be suppressed, because it appears, now that more material is available, that these nominal taxa cannot be distinguished. There is a second male of *C. agilis* in the Saunders collection from ' Wag. ' (Waigiou). This cannot be a syntype. Probably it is a male of *C. loriae* Cam., because it has only three yellow bands on the abdomen. J.G.B.]

2. *albofimbriata*

1879. *Scolia* (*Dielis*) *albofimbriata* Smith, ♀, ♂: 189. 'Hab., Costa Rica, Cache'.
1893. *Elis albofimbriata* Cameron, ♀, *Biol. Centr. Amer.*, Hym. **2** : 229, pl. 12, f. 13.
= 1957. *Campsomeris* (*Lissocampsomeris*) *columba albofimbriata* (Smith) Bradley: 75.

The holotype is in the British Museum and bears the number: '15.1378'. For details cf. Bradley, 1945 : 30.

3. *alecto*

1858. *Scolia alecto* Smith, ♀, ♂: 10. 'Hab. Celebes'.
1864. *Scolia* (*Triscolia*) *alecto* Saussure & Sichel, ♀, ♂: 48, n. 24.
1928. *Scolia* (*Triscolia*) *alecto* Betrem, ♀, ♂: 237.
= 1964. *Megascolia* (*Regiscolia*) *alecto alecto* (Smith) Betrem & Bradley: 443, n. 4a.

The lectotype is the only female in the Saunders collection without locality label, but bearing Smith's mss. label '*Scolia alecto* Sm.' It has been marked by Betrem and published by him (1928 : 237) as 'Hololectotype'.

The male specimen which Betrem (1928 : 237) referred to as 'allotype' bears the pin-label 'Mak' (Makassar, S. Celebes). There are also a male and a female in the British Museum which Betrem referred to as paratypes.

[The mesoscutum of the female lectotype is more densely punctate anteriorly than in *Megascolia alecto regnatrix* (i.e. *cincta*); it is broadly impunctate medially, very remotely punctate posteriorly as well as along the parapsidal grooves. The carina behind the tubercle on tergite 2 (1) is blunter and longer than in *M. alecto regnatrix*. Wings reflecting blue-violet; the veins dark; no distinct pale area in the first submarginal cell. J.G.B.]

4. *ambigua*

1862. *Scolia ambigua* Smith, ♀: 52. 'Hab. Gilolo'.
1864. *Scolia* (*Discolia*) *ambigua* Saussure & Sichel, ♀: 108, n. 99.
1928. *Campsomeris* (*Dielis*) *nigerrima ambigua* Betrem, ♀: 106.
1963. ?*Campsomeris* (*Laevicampsomeris*) *nigerrima* Krombein, ♀: 568.
= *Campsomeris* (*Laevicampsomeris*) *nigerrima* (Smith) Betrem, infrasubspecific form *ambigua* Smith.

The lectotype is in the Saunders collection and bears a label 'Gil' and a Smith mss. label '*Scolia ambigua* Sm.'. It has been labelled and published by Betrem as 'Hololectotype' (1928 : 106). [There are two other female syntypes in the Oxford Museum, one labelled 'Gil', the other 'G'. One of these has three punctures on one side of the scutellum, while the scutellum of the other is impunctate. Krombein regards *ambigua* as only a variant of *nigerrima*. J.G.B.]

5. *apicata*

1862. *Scolia apicata* Smith, ♀: 52. 'Hab. Celebes' (Tondano).
1864. *Scolia* (*Triscolia*) *apicata* Saussure & Sichel, ♀: 46, n. 21.
1928. *Scolia* (*Microscolia*) *apicata* Betrem, ♀, ♂: 208.
= *Microscolia apicata* (Smith) Betrem, **comb. n.**

[There is one female of *Scolia apicata* Smith in the American Museum of Natural History. It bears three labels: (1) a round, white label 'Tond.' (Tondano) such as is normal for Wallace material; (2) ' 349 '; (3) ' Collection J. Angus '; cf. the introduction.

Since neither of us could find the type nor any specimen whatsoever of *apicata* in either Oxford or London, and since this specimen belongs to the Wallace material and came from the type-locality, Tondano, it must be presumed to be the holotype, although it would seem that Smith or the British Museum would only have sent the unique type to Angus through some error. The specimen agrees exactly with the description. J.G.B.]

6. *ardens*

1854. *Scolia fervida* Burmeister, ♂, ♀: 20, n. 12.
1855. *Scolia ardens* Smith: 112, n.n. for *fervida* Burm., 1854, *nec* Smith, 1852. ' Hab. Mexico '.
1864. *Scolia* (*Triscolia*) *fervida* Saussure & Sichel, ♀: 53, n. 30.
= 1964. *Triscolia ardens* (Smith) Betrem & Bradley: 437.
1966. *Triscolia ardens* Bradley & Betrem, ♀, ♂: 75.

A new name for *fervida* Burmeister and therefore with the same type.

7. *arrogans*

1853. *Scolia decorata* Burmeister, ♂, ♀: 20, n. 39.
1865. *Scolia arrogans* Smith, ♂: 81. ' Hab. Sumatra ', **syn. n.** Betrem..
1928. *Campsomeris arrogans* Betrem, ♂: 332.
= 1964. *Scolia* (*Discolia*) *decorata* Betrem & Bradley: 93, n. 66.
1966. *Scolia* (*Discolia*) *decorata decorata* Bradley & Betrem, ♀, ♂: 75.

The unique male in the Saunders collection is the holotype and has been so labelled by Betrem. It bears a pin-label ' Sum ' and Smith's mss. label ' *Scolia arrogans* Sm.'

aureipennis

1855. ' *Scolia aureipennis* St. Fargeau ' Smith, ♀: 94. ' Hab. South Africa (Gambia) B.M. ', a misidentification.
1864. ?*Scolia* (*Discolia*) *smithii* Saussure & Sichel, ?♀, ♂: 86, n. 64, *nec* Fox, 1896.
1906. ?*Scolia* (*Discolia*) *smithii* Schulz.

Smith cited St. Fargeau as author, but the material in the British Museum, seen in 1929, that he had before him, as well as the Gambian locality, shows that he misidentified Lepeletier's oriental species. As a consequence Smith established no new name and no type.

[I could not find any material in the British Museum from Gambia in 1966 that Smith could have studied. J.G.B.]

Saussure & Sichel described both ♀ and ♂ of *smithii*, the former with a query. They cited Smith's misidentification of *aureipennis* as a synonym of the probable female, but whether rightly or wrongly can only be determined after the lectotype of *smithii* Saussure & Sichel has been selected. The material of Saussure & Sichel came from Cape of Good Hope, not Gambia, and the female is excluded from selection as a lectotype, because it was attached to *smithii* with a query.

Since this taxon involves no Smith type, I have assigned it no number in the heading.

8. *aurulenta*

1855. *Scolia aurulenta* Smith, ♀, ' Habitat Philippine Ids. B.M. '.
1864. *Elis* (*Dielis*) *aurulenta* Saussure & Sichel, ♀: 206, n. 221.
1928. *Campsomeris* (*Dielis*) *aurulenta aurulenta* Betrem, ♀, ♂: 98.
= *Campsomeris* (*Phalerimeris*) *aurulenta aurulenta* (Smith) Betrem.

[The holotype is in the British Museum, and bears the following labels: (1) ' 53/71' which means ' Philippine Islands, purchased from Cuming '; (2) ' *aurulenta* Smith type '; (3) ' B.M. type Hym. 15.1318 '; (4) ' Holotype ', added by Betrem in 1966.

The vestiture on the head, thorax, and femora is yellow-brown, except that it is partly white on femora III, and is white on the base of the abdomen.

There are three other females that stand as *aurulenta* in the British Museum, none of them syntypes: One is *C. aurulenta defectiva* Betr., and bears the following labels: (1) ' 55/8 ', which means ' Ceram, purchased of S. Stevens, collected by Mrs Ida Pfeiffer '.

The structure is as in typical *aurulenta*, but the vestiture on the under side of the head, on the propleura, mesopleura, base of t. 2(1), and on all femora is white. This colouration agrees with that of the subspecies *tondanensis* Betr., but in that subspecies the yellow-brown apical bands on the basal tergites are narrow.

The second specimen is *C. aurulenta tondanensis* and comes from Tondano in the Celebes.

The third specimen is *C. extrania leveri* Krombein. It bears the following label: ' 56/85 ', which means, ' Salomon Island, 467 collected by Sir Y. Siddel. Purchased by the B.M. after 1855 '. J.G.B., July, 1966].

9. *bifasciata*

1775. *Scolia bicincta* Fabricius, ♀, ♂, *Syst. ent.*: 356, n. 6, *nec* Scopoli, 1786, *nec* Rossi, 1792.
1855. *Scolia bifasciata* Smith: 97. ' Hab. North America ', n.n. for *bicincta* Fabricius.
1864. *Scolia* (*Discolia*) *bicincta* Saussure & Sichel, ♀, ♂: 129–130, n. 135.
= *Scolia* (*Discolia*) *bicincta* Fabricius.

Smith gave no description, but intended *bifasciata* as a new name for *bicincta* Fabr. which he mistakenly quoted as from the *Ent. syst.*, 1793, and therefore invalidated by *bicincta* Rossi, 1792, whereas *bicincta* Fabr. actually dates from the *Syst. ent.*, 1775, and itself preoccupies all the other uses of *Scolia bicincta*. Smith also included *obscura* Klug and *radula* Sulz. in the synonymy of *bifasciata*. The former is a synonym of *bicincta* F., and the latter is not an American species. From a nomenclatural standpoint it can be questioned whether Smith did anything more than create a *nomen nudum*, or if it be held that he proposed a new name for one of the three that he cited, and that the first reviser has settled which, then Saussure & Sichel, 1864 : 130, have restricted it to being a replacement-name for *bicincta* F. The matter is of only academic interest, since *bifasciata* was itself preoccupied by Rossi, 1792, and *bicincta* F. is a valid name. For somewhat similar cases see *erratica* and *soror*.

10. *bimaculata*

1854. *Scolia frontalis* Saussure, ♀, ♂, *Mém. Soc. Phys. Hist. nat. Genève* **14** : 38, n. 16, fig. 13; *teste* Betrem, **syn. n.**
1855. *Scolia bimaculata* Smith, ♀: 115, ' Hab. New Holland, Port Stephen. B. M. '.
1855. *Scolia coronata* Smith, ♀: 112, ' Hab. Australia (Adelaide)'; *teste* Betrem, **syn. n.**
1928. *Scolia* (*Laeviscolia*) *frontalis frontalis* Betrem, ♀, ♂: 222.
= *Laeviscolia frontalis* (Saussure, 1854) Betrem, **comb. n.** and **syn. n.**

[There is one female in the British Museum with the label ' 44/105 ', on the reverse ' P. Stephen '; this means: ' Port Steven(s) ' (harbour in New South Wales, Co. Gloucester, 32° E., 42° S.) ' pres. by the Earl of Derby, coll. by Mac Gillavry '.

This specimen is the holotype of *Sc. bimaculata*. It agrees with Smith's description, and the type locality is so extraordinary, that there can be no doubt about it. I have labelled it ' Holotype '. It is registered as B.M. type, Hym. 15.1423.

There is one male of the same species in the British Museum collection with the label ' Adelaide ' and ' Smith coll. pres. by Mrs Farren-White 99–303 '. It is not a syntype, because Smith did not mention a male.

Betrem (1928 : 113) synonymized this species with *Elis anthracina* var. *consanguinea* Saussure, 1854, probably on the authority of Saussure & Sichel (1864 : 140, n. 148), although he had seen the type in the British Museum in 1926.

Smith placed *bimaculata* in the wrong division. The type has no second recurrent vein in the fore wings. This fact and the very obvious transverse yellow band on the vertex leave no doubt that *bimaculata* is a synonym of *S. frontalis* Saussure, 1854. J.G.B.]

11. *captiva*

1862. *Scolia captiva* Smith, ♂: 52. ' Hab. Gilolo '.
1862. *Scolia ambigua* Smith, ♀: 52. ' Hab. Gilolo '.
1864. *Scolia* (*Discolia*) *captiva* Saussure & Sichel, ♂: 107, n. 98.
1928. *Campsomeris* (*Dielis*) *captiva* Betrem, ♂: 107.
1933. *Campsomeris* (*Laevicampsomeris*) *captiva* Betrem: 240.
= *Campsomeris* (*Laevicampsomeris*) *captiva* (Smith) Betrem, ♂.

A male from Gilolo (i.e. Halmahera) in the Saunders collection agrees with Smith's description and was referred to by Betrem, 1928 : 107, as Smith's holotype. I hereby designate it to be the LECTOTYPE. There is also a male from Gilolo in the British Museum bearing the Smith collection printed label on which someone, but not Smith, has written ' type '. It may be a syntype or it may be from later material, probably the former.

[The male of *Scolia captiva* in the British Museum bears the pin-label ' Gil ', not ' Cel ' as I had thought in 1926. The locality that I gave for ' Paratype Smith's, ' 1928 : 107, should therefore be Gilolo, not Celebes. This male also bears the following information on its labels: ' F. Smith Coll. 19–22 ', and ' type no. 15–1392 '. In 1864 : 28, Smith recorded this species also from Waigeou and Martabella. A specimen marked ' Wag. ' is in the Saunders collection.[3]

I placed *Scolia captiva* in my monograph in the synonymy of *Scolia* (*Austroscolia*)

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[3] Krombein, 1963 : 566, regards Smith's Waigiou and New Guinea specimens as being *C.* (*L.*) *bonguensis* Betrem, 1933.

nitida also (1928 : 210). I indicated that the male allotype of *nitida* is the holotype of *Scolia captiva* Smith. These references must be deleted. They probably were inserted by an error, the nature of which cannot now be ascertained, since the notes that I made in 1926 were lost in Java during the war. On re-examining the collections of the Hope Museum at Oxford in 1964, I could not find a specimen of any species of *Austroscolia.* This erroneous citation has already caused some confusion in the literature, ex. gr. Krombein, 1963 : 566.

There are two females of *Carinoscolia opalina* Smith under the label *captiva* in the Oxford Museum, which must have been placed there by accident.

It is not known with which female *C. captiva* belongs, because the males of almost all species of the subgenus *Laevicampsomeris* are so similar.

Krombein (1963 : 159), could also not distinguish the males of *C. bonguensis* from those of *C. nigerrima.* The male type of *captiva* and the female type of *ambigua* are each from Gilolo so that they appear to belong together. If we synonymize *ambigua* Sm. with *nigerrima* Sm., *captiva* Sm. would become a synonym of the last mentioned nominal species. J.G.B.]

12. *cincta*

1858. *Scolia cincta* Smith, ♀: 89. ' Hab. Borneo ' (Sarawak), *nec Scolia cincta* Klug.
1864. *Scolia* (*Triscolia*) *cincta* Saussure & Sichel, ♀: 45, n. 19.
1928. *Scolia* (*Triscolia*) *alecto cincta* Betrem, ♀: 226.
= 1964. *Megascolia* (*Regiscola*) *alecto regnatrix* Betrem & Bradley: 442.

There are two females in the Saunders collection each bearing Smith's mss. label ' *Scolia cincta* Sm. '. One bears a pin-label ' Sum ', the other ' Sar. '. Betrem has correctly labelled the latter ' Holotype '. On the back of Smith's name label on this specimen is written: ' New sp. most like *patricialis* but without pale maculae on abd. '. The specimen agrees with Smith's description. The other female from ' Sum ' is not a type. It is a different species, *azurea* according to Betrem (see below). Betrem, 1928 : 226, has included ' *alecto* subsp. *cincta* Sm. ' in his key, but has omitted the subspecies *cincta* under his account of the species *alecto* on p. 237. He therefore gives a short description here of the holotype.

[Description of the Holotype of *Scolia cincta*

♀. Spatium frontale above, front, vertex and upper temples yellow. Vestiture black except long setae on the central apical part of tergite 2(1), the fringes of tergite 3(2), long setae on the epipygium, and fringes on the sides of the last sternite yellow-red.

Mesonotum densely punctate anteriorly, broadly impunctate medially and posteriorly, more densely punctate along the parapsidal furrows. Tubercle of tergite 2(1) not very large, elongate in the form of a carina.

Wings with a greenish, yellow-golden effulgence; a distinct transverse pale area in the first submarginal cell; veins yellowish.

The female from Sumatra in the Saunders collection, bearing Bradley's label ' 1.4.2.29 *alecto* ' is a specimen of *azurea*, as is proven by the presence of a deep groove behind the tubercle of tergite 2(1). It has red setae only on the epipygium, and there are two obscure red spots on tergite 4(3). The pale colour on the head is yellow. J.G.B.]

13. *conspicua*

1845. *Colpa wesmaeli* Lepeletier, ♀: 536, n. 3.
1855. *Scolia conspicua* Smith, ♀: 107. 'Hab. Brazil (Para) (H. W. Bates) B.M.'.
1864. *Elis* (*Dielis*) *conspicua* Saussure & Sichel, ♀, ♂: 228, n. 243.
1945. *Campsomeris wesmaeli* Bradley, ♀, ♂: 25.
= 1957. *Campsomeris* (*Lissocampsomeris*) *wesmaeli* (Lepeletier) Bradley: 76.

The holotype is in the British Museum, cf. Bradley, 1945 : 26.

14. *coronata*

1854. *Scolia frontalis* Saussure, ♀, ♂, *Mém. Soc. Phys. Hist. nat. Genève*, **14** : 38, n. 16, fig. 13.
1855. *Scolia coronata* Smith, ♀: 112. 'Hab. Australia (Adelaide) B.M.'.
1928. *Scolia* (*Laeviscolia*) *frontalis frontalis* Betrem, ♀, ♂: 222.
= *Laeviscolia frontalis frontalis* (Saussure, 1854) Betrem, **comb. n.**

[The specimens in the British Museum are:

A. A female bearing the following labels: (1) '*S. coronata* Sm. type', a white label with red margin; (2) 'lectotype', attached by Betrem in 1966. There is no locality label. It is registered as B.M. Type, Hym. 15.1427. Smith did not observe the three submarginal cells, because the very dark wings are folded over the back.

B. A female labelled: (1) '52/9', with 'Adelaide' on the reverse. This label means 'S. Australia (Adelaide), purchased from Stevens, collected by Dr. Wilson'; (2) 'paralectotype' attached by Betrem in 1966.

C. A male also labelled '52/9'.

D. A male labelled: '99–303' meaning 'Adelaide, Smith coll., presented by Mrs Farren-White'.

E. Another male, with the same label as D, but actually a male of *bimaculata* Sm.

The males are not syntypes, since Smith did not describe that sex. J.G.B., 1966.]

15. *culta*

1838. *Scolia formosa* Guérin, ♀, in Duperry, *Voy. Coquille.*, Zool., **2**, pt 2 : 252.
1861.[4] *Scolia culta* Smith, ♀: 117. 'Hab. Dory' (N. Guinea).
1864. *Scolia* (*Discolia*) *culta* Saussure & Sichel, ♀: 122, n. 123.
1928. *Campsomeris* (*Pseudotrielis*) *formosa culta* Betrem, ♀, ♂: 87.
1963. *Campsomeris* (subg.?) *formosa* Krombein, ♀, ♂: 571, fig. 16.
= *Campsomeris* (*Laevicampsomeris*) *formosa formosa* (Guérin, 1838) Turner, infrasubspecific form *culta* Smith.

A specimen in the British Museum was collected by Wallace at Dory and was purchased in 1858 from Stevens; it is the only *culta* in that museum. But Smith described *culta* as from the Saunders collection (cf. Smith, 1861 : 94) and there is a specimen in that collection which bears Smith's mss label '*Scolia culta* Sm', but not 'type'. Betrem has marked but not recorded it as 'type'. I hereby confirm it as LECTOTYPE, assuming that Smith saw also the British Museum specimen. The latter agrees with Smith's description, except that the hind tibiae are not black beneath at base, and the line on tergite 5(4) is very weak. The type in Oxford has a much stronger second recurrent vein, as also the line on tergite 5(4) and the hind tibiae dark at base within.

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[4] This is a correction of the reference to the preceding volume 4, 1860, both by Dalla Torre and by Betrem, 1928 : 87.

The strength of the second recurrent vein is variable. The types agree with typical *formosa* (Guérin) as described by Betrem, 1928 : 86. The taxonomic subspecies identified by Betrem as *culta* must be abandoned, certainly the name *culta*, as has been suggested by Tuijn, 1961, and by Krombein, 1963 : 572, to which Betrem agrees.

16. *dubia*

1864. *Scolia dubia* Smith, ♂: 28, *nec* Say, 1837. ' Hab. Ceram '.
1889. *Diliacos dubia* Kirby, ♀, *Trans. Ent. soc. Lond.*: 444, a misidentification.
1896. *Scolia loewitii* Dalla Torre: 168, n.n.
1928. *Scolia* (*Austroscolia*) *aruicola* Betrem, ♂, ♀: 216.
1933. *Scolia* (*Austroscolia*) *loewitii* Betrem,: 254.
= *Austroscolia loewitii* (Dalla Torre, 1896) **comb. n.**

Three males in the Saunders collection bear Smith's mss. label ' *dubia* '. One, from ' Wag ' is not a syntype, another is from ' Ceram. '. The third bears the label ' Cer. E. ' (East Ceram) and is the lectotype. It is the specimen called ' Holotype ' of *loewitii* by Betrem, 1928 : 212, although it does not belong in the taxonomic species in which he placed it.

[This is the taxonomic species that I described as *aruicola*, 1928 : 216, but which is in fact *Sc. loewitii* Dalla Torre, 1896. The taxon that I erroneously called *Sc.* (*Austroscolia*) *loewitii* Dalla Torre (loc. cit.: 212), I renamed *Scolia* (*Austroscolia*) *nitidella dallatorrei* in 1933 : 354.

A female stands under the label *dubia* in the British Museum with the pin-label ' Ceram $\frac{5\,5}{8}$ '. It is *Diliacos gracilipes* Micha, 1927 : 75. I think that it cannot be a syntype of *dubia*, because it seems to have been already acquired in 1855. The females recorded by Kirby from the Solomon Islands are *Diliacos glabrata* Micha, subspecies *praslini* Bradley, according to the specimens in the British Museum. Another female from Ceram in the British Museum standing as *dubia*, was presented by Turner (1913–438) but is in reality a specimen of Micha's *gracilipes* mentioned above. J.G.B.]

17. *ducalis*

1861. *Scolia ducalis* Smith, ♀: 118. ' Hab. Kaisaa '.
1864. *Scolia* (*Triscolia*) *ducalis* Saussure & Sichel, ♀: 49, n. 25.
1928. *Scolia* (*Megascolia*) *ducalis ducalis* Betrem, ♀: 244.
= 1964. *Megascolia* (*Megascolia*) *velutina ducalis* (Smith) Betrem & Bradley: 444, n. 3a.

An unique female in the Saunders collection bears the pin-label ' Kai ' and also Smith's mss. label ' *Scolia ducalis* Sm. '. It is the holotype, and has been so labelled by Betrem, who (1928 : 244) recorded it erroneously as being in the British Museum.

18. *erratica*

1854. *Scolia verticalis* Burmeister, ♂: 37, n. 61. A misidentification of *S. verticalis* Fabricius.

1855. *Scolia erratica* Smith, ♂, not ♀: 88. ' Hab. India, Sumatra ', a new name for *Scolia verticalis* Fabricius, as misidentified by Burmeister.

1911. *Scolia erratica* Turner, *Ann. Mag. nat. Hist.* (8) **8** : 619.

1928. *Scolia* (*Scolia*) *erratica erratica* Betrem, ♀, ♂: 271.

1964. *Scolia* (*Discolia*) *erratica* Betrem & Bradley: 92, n. 29.

= *Scolia* (*Discolia*) *erratica erratica* Smith, 1855.

Burmeister in 1854 described a male *Scolia* from Sumatra under the name *verticalis* Fabricius. This was a misidentification of the Fabrician species, which came from ' New Holland ' (Australia).

The following year Smith proposed a replacement name for *verticalis* sense of Burmeister, not of Fabricius. This new name was ' *erratica* '. He did not say ' new name ', to use those words was not his custom, but he did write as a synonym ' *Scolia verticalis* Burm., Abh. Nat. Ges. Halle, i.37.61 (*nec.* Fabr.) ' and he backed up the synonymy by translating Burmeister's Latin description of the male (the only sex described by Burmeister[5]).

To this he added a single character (' the prothorax sometimes red ') drawn from a female of another species[6] which he erroneously supposed to be the female of *erratica*.

The case obviously comes under Article 72(d) of the code[7] and the type must be sought for among Burmeister's specimens.

The fact that Saussure misidentified *erratica* Smith in 1858 and that he and Sichel, 1864 : 111, n. 104, renamed his misidentified material *molesta*, has no bearing on the matter.

Turner, 1911 : 619, noted that Saussure's description of *molesta* answers well ' to Smith's type ' (of *erratica*), but it is not possible to construe this as having any bearing upon the identity of the latter.

[There is a specimen in the British Museum labelled in Smith's handwriting ' *erratica* Sm. type '. It bears a second label: ' B.M. type Hym. 15 : 311. '. It has no locality label. In July, 1962, I marked it ' lectotype ', but probably wrongly. Smith's label suggests that he intended to establish a new species, but our present rules do not seem to admit that interpretation. Since it is a male of *Scolia erratica erratica* the matter is not of great significance. Its fore wings are dark, with a coppery reflection, more rose-purple at apex. J.G.B.]

[There is a male in the old collection of the Oxford Museum that is labelled ' *Sc. erratica verticalis* '. This is further indication that Smith studied the material in that museum. J.G.B.]

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[5] Betrem, 1928 : 271, under the synonymy of *erratica* refers to *verticalis* Burmeister ' ♂, *nec* ♀ ' ; but as Burmeister described only the male, ' *nec* ♀ ' must be struck out. For the same reason the entire first line in the synonymy of *vollenhoveni* on p. 289 must be struck out.

[6] [The specimen is in the collection of the British Museum and is a female *S. vollenhoveni* Saussure, 1859. J.G.B.]

[7] ' Article 72(d). Types of replacement nominal species.

If an author proposes a new specific name expressly as a replacement for a prior name, but at the same time applies it to particular specimens,' (the male *erratica* and mistakenly identified female that Smith had before him) ' the type of the replacement nominal species ' (here *erratica*) ' must be that of the prior nominal species ' (*verticalis* Burmeister, *nec* Fabricius) ' despite any contrary designation of type-specimen or different taxonomic usage of the replacement name '.

19. *eximia*

1854. *Scolia guttata* Burmeister, ♀: 36, n. 57.
1855. *Scolia eximia* Smith, ♀: 99. ' Hab. India, B.M. '.
1864. *Elis* (*Dielis*) *eximia* Saussure & Sichel: 195, n. 208.
1928. *Campsomeris eximia* Betrem, ♀: 333.
1964. *Scolia* (*Discolia*) *guttata*, var. *eximia* Betrem & Bradley: 96, n. 134.
= *Scolia* (*Discolia*) *guttata* Burmeister, infrasubspecific form *eximia* Smith.

A female in the British Museum (type no. 15.1282) has no locality label but bears Smith's mss. label ' *eximia* Sm. type '. It is the holotype, and is a specimen of *guttata* Burm., the published locality ' India ' being incorrect. Bingham reported, incorrectly, that the type is not in the British Museum. This species should be deleted from Betrem's key to *Campsomeris*, 1928 : 66, couplet 1b, and from p. 333. It is a neotropical taxon.

20. *facilis*

1839. *Elis elegans* Brullé, ♂, ♀, *Hist. nat. des Îles Canaries*, **2**, pt. 2 : 91, n. 50, pl. 3, fig. 18, ♂, 19, ♀.
1855. *Scolia facilis* Smith, ♀: 98. ' Hab. Canary Ids. (Coll. W. W. Saunders, Esq.) '.
1864. *Elis* (*Dielis*) *elegans* Brullé, Saussure & Sichel, ♀, ♂: 174, n. 177.
= *Campsomeris* (*Micromeris*) *aureola elegans* (Brullé) **comb. n.** and **stat. n.,** teste Betrem.

There are two female syntypes in the Saunders collection from the Canary Islands. They stand in front of the label ' *facilis* Smith '. I hereby designate the one with a large spot at each side of the third tergal band ' LECTOTYPE ', and I have so labelled it. It is an *elegans* with an exceptional amount of yellow on the first three tergites.

[There are also two females labelled ' Can'y ' (Canary Islands) in the old collection at Oxford. They have an exceptional amount of yellow on the basal tergites. I suppose that these are syntypes. J.G.B.]

Betrem is responsible for giving *elegans* the status of a subspecies of *aureola* in the subgenus *Micromeris*, but Turner transferred *aureola* to *Campsomeris*.

[The wings not pilose except extreme anterior margin; longer spur of tibiae III distinctly but slightly spatulate; transition between the horizontal area and the vertical parts of the metapleura forming a blunt angle. Clypeus striate anteriorly. The preceding characters appertain to the lectotype and paratype. J.G.B.]

21. *fasciatopennis*

1855. *Scolia fasciatopennis* Smith, ♀, ♂: 103. ' Hab. West Africa (Coll. F. Smith) '.
1864. *Elis* (*Dielis*) *fasciatipennis* [*sic!*] Saussure & Sichel, ♀, ♂: 169, n. 171, an emendation.
1889. *Discolia fasciatipennis* Kirby, ♀, ♂, *Trans. ent. Soc. Lond.*: 448.
= 1964. *Scolia* (*Discolia*) *fasciatipennis* Betrem & Bradley: 94, n. 95.

There is a female in the British Museum that bears a mss. label ' *fasciatipennis* Sm. ' [*sic*!] and a second printed label ' F. Sm. Coll. 79 : 22 ' with ' type ' written on it. It is the British Museum Type 15.1287. It agrees with the description. I hereby designate it LECTOTYPE and Betrem has labelled it, July, 1966. Another female in the British Museum has no label except ' W. Afr. ' but there is nothing to indicate that it came from the Smith collection. The two are identical.

The male allotype, from ' Gambia ' is also in the British Museum. It is one of a series of types purchased by the Museum from the Smith collection after his death.

The original description of this species was included among those having two recurrent veins, but the lectotype has only one. Kirby says this was done inadvertently, but it caused Saussure & Sichel to confound *fasciatopennis* with a species of *Campsomeris*.

[There is a specimen marked ' type ' in the Oxford Museum and it is in drawer 43 of the type-collection, but has been extracted from drawer 40 of the old Hope collection. It is a *Scolia* from Sierra Leone as indicated by the initials ' S. L. ' on the label.

The following specimens are labelled *fasciatipennis* [*sic*!] in drawer 40: (1) a female *Campsomeris* with dark anterior wing-margin from Sierra Leone; (2) a female *Liacos* labelled ' Raddon, W. Africa '; (3 and 4) two male *Scoliae* from Sierra Leone; (5) a male *Scolia* labelled ' Raddon, Gold Coast '; (6) a female *Liacos* from Lake N'Gami, Castelneau, 1862. It is possible that Smith saw this mixture of specimens that all look alike but have different wing-venation, and that it is the explanation of his confusion.

Except the Castelneau specimen, I suppose that the other specimens are old because William Raddon published in 1835 and 1836 according to Horn. J.G.B.]

22. *fascinatus*

1873. *Scolia* (*Discolia*) *fascinatus* Smith, ♂: 185. ' Hab. Hiogo Japan '.
1917. *Discolia fascinatus* Matsumura, ♂, *Konchu Bunruiguku* **2** : 307.
1928. *Scolia* (*Carinoscolia*) *vittifrons vittifrons* Betrem, ♂, *nec* ♀: 186.
1941. *Scolia* (*Carinoscolia*) *fascinatus fascinatus* Betrem, ♂, ♀: 113.
= *Carinoscolia fascinatus fascinatus* (Smith) Betrem, **comb. n.**

There is only one male from Japan in the British Museum. It bears a printed label ' Hiogo Japan ', a museum printed type-label, a mss. label ' *Scolia fascinatus* Smith ', and a printed label ' Smith Coll. ' on one end of which is written ' type '. It is the holotype. In Betrem's key (1928 : 177) it runs to *vittifrons* with which Betrem at that time identified it.

[I could not find the type in the British Museum in 1966. I now regard the Japanese *fascinatus* as a species distinct from the Chinese *vittifrons*. I have stated the reason in my 1941 paper. J.G.B.]

23. *fenestrata*

1854. *Elis dimidiatipennis* Saussure, ♀, *Mém. Soc. Phys. Hist. nat. Genéve* **14** : 64, n. 32.
1855. *Scolia fenestrata* Smith, ♀: 104. ' Hab. Congo = Gambia '.
1864. *Elis* (*Dielis*) *dimidiatipennis* Saussure & Sichel, ♀: 168, n. 170.
1896. *Scolia dimidiatipennis* Dalla Torre: 154.
= *Campsomeriella* (*Campsomeriella*) *dimidiatipennis* (Saussure) Betrem.

Although Betrem, 1947 (1945) : 413, listed *dimidiatipennis* as a subspecies of *thoracica*, he no longer so regards it. There are three female syntypes in the British Museum, two from ' Congo ' and one from ' Gambia '. One of those from Congo is marked ' type ' on Smith's mss. label, and I hereby designate it LECTOTYPE.

[The lectotype bears the labels: (1) ' Congo '; (2) a white label with red margin, '*fenestrata* Sm. type '; (3) ' lectotype ', label added by Betrem, 1966. It is registered as B.M. Type, Hym. 15.1425. I find two syntypes from Gambia.

A female in the old collection at Oxford is labelled ' S. L. ' (= Sierra Leone). Since Smith did not mention this locality it is not a syntype. J.G.B.]

24. *fervida*

1805. *Scolia analis* Klug, ♀, *Beitr. z. Naturk.* **1** : 36, n. 31, *nec* Fabricius, 1804.

1810. *Scolia cruenta* Klug, ♀, *loc. cit.* **2** : 168, n.n. for *analis* Klug, *nec* Fabricius.

1852. *Scolia fervida* Smith, ♀: 46, ' Hab. Poona, collected by Ezra T. Downes. Presented to the Honorable The East India Company '.

1928. *Scolia* (*Scolia*) *sexpustulata* Betrem, 1928: 310.

= 1964. *Scolia* (*Discolia*) *cruenta* Klug, Betrem & Bradley: 93, n. 59.

[The holotype, a female in the British Museum, bears the following labels: (1) ' Ind ' (India); (2) a blue paper label, '*fervida* Smith '; (3) ' 99–303 ', which means: ' Smith coll., presented by Mrs Farren-White '; (4) ' holotype ', added by Betrem in 1966. It is registered as B.M. Type, Hym. 15.1430.

This is *Scolia cruenta* Klug without any doubt. Some difficulty arises in my key, 1928 : 257, because the type has a distinct, but faint, red cross-band on the front. J.G.B., July, 1966.]

25. *flavidula*

1855. *Scolia flavidula* Smith, ♀: 115. ' Hab. Australia, B.M. '.

1864. *Elis* (*Trielis*) *flavidula* Saussure & Sichel, ♀: 143, n. 151.

1909. *Campsomeris* (*Trielis*) *flavidula* Turner, ♀, ♂, *Ann. Mag. nat. Hist.* (8) **4** : 171.

1928. *Campsomeris* (*Pseudotrielis*) *flavidula* Betrem, ♀: 85.

= *Trisciloa* (*Pseudotrielis*) *flavidula* (Smith) Betrem, **comb. n.**

The holotype in the British Museum bears Smith's mss. label '*flavidula* Sm. type ', and the type-number: 15.1518.

26. *flavopicta*

1854. *Scolia decorata* Burmeister, ♀, ♂: 30, n. 39.

1855. *Scolia flavopicta* Smith, ♀: 91. ' Hab. Java. B.M. '.

1864. *Scolia* (*Discolia*) *decorata* Saussure & Sichel, ♀, ♂: 122, n. 122.

1928. *Scolia* (*Scolia*) *decorata decorata* var. *flavopicta* Betrem, ♀: 321.

= *Scolia* (*Discolia*) *decorata decorata* Burmeister, infrasubspecific form *flavopicta* Smith, *teste* Betrem.

[The holotype, a female in the British Museum, bears the following labels: (1) ' 49/5 ' with ' Java ' on the reverse, means ' 14 Hym. Java purchased of Argent '; (2) ' holotype ', attached by Betrem in 1966. It is registered as B.M. Type, Hym. 15.1432.

There is another female of *flavopicta* in the British Museum labelled ' 54/76 ', on the reverse ' Sumatra '; the reference means ' various localities, purchased of Stevens '. A specimen of *Megascolia* (*Regiscolia*) *azurea* is similarly labelled, and bears additional labels: (1) '*flavopicta*, type '; (2) ' B.M. type Hymen. 15.1296 '; (3) a white label with red margin, ' type '. Type-labels on this female are of course false. J.G.B., 1966].

27. *fraterna*

1855. *Scolia fraterna* Smith, ♀, ♂: 94. ' Hab. Port. Natal '.
= 1864. *Scolia* (*Discolia*) *fraterna* Smith, Saussure & Sichel, ♀, ♂: 82, n. 59.

A female in the British Museum from ' Port Natal ' bears Smith's mss. label ' *Sc. fraterna* Sm. type ' and ' B.M. Hym. 15.1285 '. I hereby designate it LECTOTYPE. It does not exactly agree with the description which fails to mention red antennae, and the punctation on the abdomen is very fine and sparse, especially on tergite 2(1).

28. *fulgidipennis*

1859. *Scolia fulgidipennis* Smith, ♀, ♂: 152. ' Hab. Aru '.
1864. *Scolia* (*Discolia*) *fulgidipennis* Saussure & Sichel, ♀: 109, n. 101.
1889. *Diliacos fulgidipennis* Kirby, *Trans. ent. Soc. Lond.*: 444.
1928. *Scolia* (*Liacos*) *fulgidipennis* Betrem, ♀, ♂: 175.
1963. *Scolia* (*Liacos*) *fulgidipennis* Krombein, ♀, ♂: 609.
= *Liacos fulgidipennis* (Smith) Betrem, **comb. n.**

A female and a male are in the Saunders collection labelled ' Aru ', and a female labelled ' Dor ' (= Dorey). I hereby select the female labelled ' Aru ' to be LECTOTYPE (Betrem, 1928 : 175, referred to it as holotype). It agrees with Betrem's description but its wings reflect brilliant green, more yellow-green toward the margin. Seen in a certain light their reflection is violet-blue on the basal part, green-blue at the margins. A specimen in the British Museum bears, incorrectly, the label ' type 15.1374 '.

29. *fulvipennis*

1859. *Scolia fulvipennis* Smith, ♂: 10. ' Hab. Celebes '.
1864. *Scolia* (*Discolia*) *fulvipennis* Saussure & Sichel, ♀: 125, n. 129.
= 1928. *Scolia* (*Scolia*) *fulvipennis* Smith, Betrem, ♂, ♀: 276.

There are two male syntypes in the Saunders Collection. Betrem has labelled ' lectotype ' the one that bears Smith's mss. label ' *fulvipennis* ', but he referred to it (1928 : 276) as ' holotype Smith's ' from Makian, misinterpreting its locality label ' Mak ' as meaning the island of Makian, instead of Makassar in the South Celebes. I hereby confirm the status of this specimen as LECTOTYPE. It agrees with Betrem's interpretation of the species 1928 : 276.

30. *habrocoma*

1855. *Scolia habrocoma* Smith, ♀: 100, ' Hab. India (Coll. W. W. Saunders, Esq.) '.
1864. *Elis* (*Dielis*) *habrocoma* Saussure & Sichel, ♀: 198, n. 212.
= 1928. *Campsomeris* (*Megacampsomeris*) *habrocoma* (Smith) Betrem, ♀, ♂: 144.

An unique female in the Saunders collection agrees exactly with the original description. It stands in front of the label ' *habrocoma* Sm. Ind. '. It bears a pin-label ' E.I. ', but, as pointed out by Betrem, it bears a label ' *E. servillei* Guér.? Voy. Coq. '. This label, if not indeed present by mischance, is without significance. It can represent nothing more than someone's incorrect endeavour to identify the specimen with *servillei* which is South American. The pin label ' E.I. ' is correct, since the taxonomic species *habrocoma* occurs in Java, but not in India. Smith published a wrong type-locality. Betrem, 1928 : 144, referred to this specimen as ' holotype ' and I have so labelled it.

31. *hirtipennis*

1855. *Scolia oryctophaga* Coquerel, ♀, *Ann. Soc. ent. France* (3) **3** : 170, pl. 10, fig. 2.

1855. *Scolia hirtipennis* Smith, ♀, ♂: 95. ' Hab. Madagascar (coll. F. Smith) '.

= 1864. *Scolia* (*Discolia*) *oryctophaga* Coquerel, Saussure & Sichel, ♀, ♂: 78, n. 52.

A female in the British Museum bears Smith's mss. label ' *Scolia oryctophaga* Co. *S. hirtipennis* Smith ' and also a museum printed label ' Smith Coll. ' with the word ' type ' written on it. Another female bears Smith's mss. label ' *hirtipennis* Smith type ' but there is nothing to indicate that it came from the Smith collection. This specimen has a hairy propodeum which does not appear sericeous and which has its punctures more or less obscured by hair. In the former the propodeum is denuded, therefore appears ' more finely punctate and covered with a sericeous pile ' as described by Smith. I hereby designate the female with Smith's mss. type-label to be LECTOTYPE, and have so labelled it (B.M. type, Hym. 15.1421), despite the fact that the other agrees better with his description.

32. *ignita*

1854. *Scolia indica* Saussure, ♀, *Mém. Soc. Phys. Hist. nat., Genève*, **14** : 46, fig. 10.

1855. *Scolia ignita* Smith: 101, ♀, ' Hab. Silhet, North Bengal; Travan, B.M. '.

1928. *Campsomeris* (*Campsomeris*) *indica* Betrem, ♀, ♂: 116.

1928. *Campsomeris* (*Trielis*) *assamensis* Betrem, ♂: 111, **syn. n.,** Betrem.

1941. *Campsomeris* (*Colpacampsomeris*) *indica* Betrem: 101.

= *Campsomeris* (*Colpacampsomeris*) *indica indica* (Saussure) Betrem, **stat. n.** *teste* Betrem.

[The holotype was in the British Museum labelled ' type $\frac{45}{107}$ Sylhet ' but I could not locate it in 1966, and it is not in the card-index of types. This species is identical with *indica* Saussure for which that author mentioned no type-locality. I distinguish four subspecies as follows:

1. *C.* (*Colpacampsomeris*) *indica indica* (Saussure, 1854) Betrem [= *ignita* Smith, 1855] [= *assamensis* Betrem, 1928, **syn. n.**]. Silhet.
2. *C.* (*Colpacampsomeris*) *indica eliformis* (Saussure), **stat. n.** Ceylon.
3. *C.* (*Colpacampsomeris*) *indica salvazai* Betrem, 1941. Cochin China (South Vietnam).
4. *C.* (*Colpacampsomeris*) *indica pseudojavanica* Betrem, 1928, **stat. n.** Taiping, in Perak, Malay Peninsula.

Saussure & Sichel, 1864, give ' Bengalia, Silhet ' as locality for *indica* Saussure, 1854. This may be construed as fixing a type-locality for that species, and as it is the type-locality for *ignita* one may conclude that Saussure & Sichel were correct in synonymizing the two. Sylhet is in extreme north-eastern East Pakistan, in what was formerly Assam, but prior to 1874 was partly Bengal.

There are three females named ' *indica* ' in the Oxford Museum. Their pin-labels are respectively ' Sylhet ', ' Travancore ', and ' India '. They may be syntypes of *ignita*. J.G.B.]

33. ***instabilis***

1854. *Scolia jurinei* Saussure, ♀, ♂, *Mém. Soc. Phys. Hist. nat., Genève*, **14** : 45, n. 21.
1855. *Scolia instabilis* Smith, ♀, ♂: 88. ' Hab. India. B.M. '.
1864. *Scolia* (*Discolia*) *aureipennis* Saussure & Sichel, ♀, ♂: 109, n. 102. Misidentification of *aureipennis* Lepeletier.
1928. *Scolia* (*Scolia*) *aureipennis* Betrem, ♀, ♂: 280. Misidentification of *aureipennis* Lepeletier
1941. *Scolia* (*Scolioides*) *jurinei* Betrem: 136.
= 1964. *Scolia* (*Discolia*) *jurinei* Saussure, Betrem & Bradley: 93, n. 34.

[There is only a single female in the British Museum that agrees with the original description and that is old enough to be a syntype; it bears the following labels: (1) ' Madras ', (mss.), and (2) ' *instabilis* Smith ' on blue paper in Smith's mss. I hereby designate it LECTOTYPE, and have added a label to that effect. It is registered as B.M. Type, Hym. 15.1424. The male syntype referred to by Smith was in the extension collection of the British Museum. It was presented by Mrs Farren-White. J.G.B., August, 1966].

34. ***insularis***

1859. *Scolia insularis* Smith, ♂: 153. ' Hab. Key Islands. Saunders Coll. '.
1864. *Scolia* (*Discolia*) *insularis* Saussure & Sichel, ♂: 107, n. 97.
= 1927. *Diliacos insularis* (Smith) Micha, ♂, *nec* ♀: 73.
1928. *Scolia* (*Diliacos*) *insularis* Betrem: 191.

Four males in the Saunders collection bear Smith's mss. label ' *Scolia insularis* '. One is from Aru, one has no locality label, one is from ' Cer. E. ' and the fourth is labelled ' Ke ' which I assume to mean Key Id. This last one agrees with the original description and I hereby designate it LECTOTYPE and have so labelled it. It was referred to by Betrem, 1928 : 192, as ' holotype ' but not labelled. Since the male without pin-label may be a syntype it is safer to say lectotype rather than holotype.

[The male lectotype in the Saunders collection labelled ' Ke ' has somewhat reddish effulgence of the wings. That of the male from Aru is more golden. There is some difference between the two in the punctation of the mesoscutum. The male from eastern Ceram is *Diliacos gracilipes* Micha, 1927, which was described from Ambon. The apical half of the disc of its tergite 2(1) is impunctate, whereas in *insularis* it is entirely, rather densely, punctate.

The material labelled *insularis* in the British Museum consists of two males of *insularis* from ' Ke I. ' from the Smith collection, one presented by Mrs Farren-White, and another male from the Smith collection no. 79–22 that is not an *insularis*, because the lower plate of the mesopleura is deeply, roughly, punctate, possibly it is the male of *Liacos schindleri* (Betrem), 1933, **comb. n.** J.G.B.]

35. ***intrudens***, 1862

1862. *Scolia intrudens* Smith, ♂, ♀: 53. ' Hab. Celebes (Tondano) ' *nec* 1868 : 241.
1864. *Scolia* (*Triscolia*) *intrudens* Saussure & Sichel, ♂: 42, n. 14.
1928. *Scolia* (*Megascolia*) *ducalis gribodoi* Betrem: 244, **syn. n.,** *teste* Betrem.
= 1964. *Megascolia* (*Megascolia*) *velutina intrudens* (Smith) Betrem & Bradley: 441, n. 3b.

The holotype, a male, is in the Saunders collection. It bears a label ' Tond. ' (i.e. Tondano, N. Celebes) and Smith's mss. label ' *Scolia intrudens* Smith ' and has been noted by Betrem, 1928 : 246. It is a male of the taxonomic species to which Betrem, (1928 : 245) applied the name ' velutina Sauss. '. The two other males in the Saunders collection are neither one from the type locality, hence are not syntypes.

36. ***intrudens***, 1868

1775. *Tiphia radula* Fabricius, ♀ *Syst. ent.*: 354, n. 5.
1868. *Scolia* (*Dielis*) *intrudens* Smith, ♀: 241. ' Hab. Champion Bay (Australia) '.
1909. *Campsomeris radula* Turner, *Ann. & Mag. nat. Hist.* (8) **3** : 484.
1928. *Campsomeris* (*Dielis*) *radula* Betrem, ♀, ♂: 88.
= 1962. *Campsomeris* (*Radumeris*) *radula* (Fabricius) Betrem, *teste* Betrem, *Ent. News*: 206.

[The holotype, a female in the British Museum, bears the following labels: (1) ' Champion Bay '; (2) ' H. du Boulay, Smith coll. '; (3) ' *Scolia* (*Dielis*) *intrudens* '.

Smith, 1868 : 231, stated ' The species not indicated as being in the National collection are in my own collection '.

Without a doubt this is *radula* F. There are specimens in the British Museum that have a narrow, yellow, apical line on tergite 2(1), but none with red tibiae and tarsi. J.G.B., July, 1966].

37. ***iridicolor***

1855. *Scolia iridicolor* Smith, ♂: 95. ' Hab. Madagascar (Coll. F. Smith) '.
= 1864. *Scolia* (*Discolia*) *iridicolor* Smith, Saussure & Sichel, ♂: 79, n. 54.

The holotype male is in the British Museum, and I have so labelled it. It bears the museum type number 15.1422. It agrees with the description and bears a label ' F. Sm. Coll. 79.22 ' and a mss. label (probably Smith's) ' *Scolia iridicolor* Sm. '. Another specimen in the British Museum that bears the museum ' type ' label and also Smith's mss. label ' *iridicolor* Sm. type ' is not a type, for it is a female, much too large to fit the description and did not come from the Smith collection but was purchased in 1858 from Stevens.

38. ***irregularis***

1793. *Scolia variegata* Fabricius, *Ent. syst.*, **2** : 230, n. 10.
1855. *Scolia irregularis* Smith, ♀, ♂: 107. ' Hab. Brazil. B.M. '.
1864. *Elis* (*Dielis*) *variegata* Saussure & Sichel, ♀, ♂: 226, n. 242.
= 1957. *Campsomeris* (*Aelocampsomeris*) *variegata* (Fabricius) Bradley, 1957: 74.

In 1940 : 6, I incorrectly referred to the ' holotype ' from Brazil. As the species was described from syntypes representing each sex, this must now be corrected to lectotype, ♀. The LECTOTYPE, by present designation, is in the British Museum; it agrees with Smith's description.

[The female lectotype bears the labels: (1) ' Braz '; (2) ' *irregularis* Sm. Type '; (3) a round white paper label with red margin ' type '; (4) a red label ' lectotype ', added by Betrem in 1966 to replace the former holotype label; (5) ' stands as *variegata* in the Smith coll. '. It is registered as B.M. Type, Hym. 15.1426. There are no males. J.G.B., July, 1966].

39. *japonica*

1787. *Tiphia histrionica* Fabricius, ♀, *Mant. ins.* **1** : 243, *nec Scolia histrionica* F., 1798.
1873. *Scolia japonica* Smith, ♀, ♂: 185. ' Hab. Hiogo (Japan) '.
1928. *Scolia* (*Scolia*) *japonica* Betrem, ♀, ♂: 322.
1941. *Scolia* (*Scolioides*) *japonica* Betrem, ♀, ♂: 166.
= 1964. *Scolia* (*Discolia*) *histrionica histrionica* (Fabricius) Bradley & Betrem: 15.

Betrem (1928 : 322) referred to Smith's female syntype in the British Museum as the holotype, but since there are at least two syntypes, female and male, it is necessary to designate the female LECTOTYPE. Its bears the museum type-number 15.1298.

40. *laeviceps*

1855. *Scolia laeviceps* Smith, ♀, ♂, p. 91. ' Hab. Hong Kong. B.M. '.
1864. *Scolia* (*Discolia*) *laeviceps* Smith, Saussure & Sichel, ♀, ♂: 118, n. 116.
1928. *Scolia* (*Scolia*) *laeviceps* Betrem, ♀, ♂: 265.
= *Scolia* (*Discolia*) *laeviceps* Smith.

The lectotype (' Hololectotype ') male, selected by Betrem, 1928 : 266, is in the British Museum.

[The lectotype bears the following labels: (1) ' 48/60 ', on the reverse: ' Hong Kong '; (2) ' *laeviceps* Sm., type '; (3) ' B.M. type Hymen. 15.1401 '; (4) a white paper label with red margin ' Type '. J.G.B., 1966].

41. *larradiformis*

1864. *Scolia larradiformis* Smith, ♀: 28. ' Hab. Waigeou '.
1864. *Scolia morata* Smith, ♂: 28. ' Hab. Mysol ', new probable synonymy, Betrem.
1927. *Diliacos larradiformis* Micha : 140, 9.
1928. *Scolia* (*Diliacos*) *larradiformis* Betrem, ♀: 196.
1963. *Scolia* (*Diliacos*) *larradiformis larradiformis* Krombein, ♀, ♂: 615.
= *Diliacos quadriceps larradiformis* (Smith) Micha, **stat. n.**

The unique type is in the Saunders collection, as already indicated by Betrem, 1928 : 196, and I have labelled it ' Holotype '. It bears a pin-label ' Waig. ' and Smith's blue mss. label ' *Scolia larradiformis* Sm. '. One wing is half torn. It agrees with Smith's description. [I re-examined the types of *larradiformis* and of *quadriceps* Smith in 1964 and regard them as subspecies, differing only in wing-colour. J.G.B.]

42. *litigiosa*

1855. *Scolia litigiosa* Smith, ♀: 113. ' Hab. India. B.M. '.
1864. *Elis* (*Trielis*) *litigiosa* Saussure & Sichel, ♀: 158, n. 164.
1950. *Campsoscolia* (*Campsoscolia*) *litigiosa* Bradley: 436.
= *Trielis* (*Trielis*) *litigiosa* (Smith) Betrem, **comb. n.**

The holotype is an unique female in the British Museum bearing a mss. label ' *litigiosa* Smith type '. Its number is 15.1362. It agrees with Smith's description.

[Description of the holotype of *Scolia litigiosa* Smith.

♀. Black, the following parts brown-yellow: the sides of the clypeus, area frontalis, spatium frontale, front, vertex, upper temples, scapulae, tergites 4(3) and 5(4) each except for a median line.

Clypeus with a broad anterior margin, the median part rather finely striate, scarcely raised, the sides coarsely punctate. Spatium frontale with only a few coarse punctures, somewhat raised, the transverse groove deep, dark-brown; fissura frontalis deep on the spatium frontale, slightly indicated on the front. Front with only a few rather coarse punctures; the postfrontal suture distinct on the sides of the front, forming a depression; front outside of this depression impunctate. Vertex very broad with coarse punctures behind the lateral ocelli.

Scapulae with sparse, coarse, punctures; mesoscutum punctate except for a rather large impunctate median area; scutellum impunctate except for some punctures anteriorly and at the sides; metanotum in greater part impunctate; metapleura strongly raised medially below the front wings; the upper anterior area of the mesopleura densely, coarsely, punctate; the upper posterior area densely punctate, except for a small area; the posterior, lower, part of the mesopleura punctate except anteriorly and posteriorly; mesopleural crest not sharp, with sparse punctures; metapleura impunctate except for some punctures below the hind wings; transition between the horizontal and vertical parts very gradual.

Area horizontalis medialis densely, coarsely, deeply, punctate. Area horizontalis lateralis with the same kind of punctures except for an impunctate area on the inner basal corner. Area before the stigma impunctate; carina lateralis distinct; area lateralis punctate above, sparsely below; area posterior medialis punctate except below; area posterior lateralis regularly punctate.

Wings dark, reflecting blue, not setose, a transverse brown-yellow line in the first submarginal cell. Longer spur of tibia III absent on the type on both sides. Vestiture black.

Tergites sparsely, rather coarsely, punctate; tergite 2 (1) without a tubercle.

This description was drawn from the type in the British Museum, which bears three pin-labels: 1st label, ' B.M. type Hymenoptera 15.1362 '; 2nd label, ' *litigiosa* Smith, type '; 3rd label, ' Ind. '. I doubt whether India is the correct locality, at most it could have come from West Pakistan.

This species is allied to *Trielis interrupta* (Fabricius). It differs from *Trielis klugii* (v.d. Linden), **comb. n.,** its closest ally, by its more punctate vertex, the deeper depression on the front, the more sparsely punctate scapulae, and the darker wings. J.G.B.]

43. *luctuosa*

1854. *Scolia 4-guttulata* Burmeister, ♀: 21, n. 17.
1855. *Scolia luctuosa* Smith, ♀: 101. ' Hab. Silhet (India) B.M.'.
1864. *Elis* (*Dielis*) *luctuosa* Saussure & Sichel, ♀, ♂: 194, n. 206.
1928. *Campsomeris* (*Colpa*) *peregrina* Lepeletier var. *4-guttulata* Betrem, ♀: 115.
1941. *Campsomeris* (*Sericocampsomeris*) *4-guttulata* Betrem: 92.
= *Campsomeris* (*Sericocampsomeris*) *quadriguttulata quadriguttulata* (Burm.) Betrem, **stat. n.**

[The holotype is a female in the British Museum. It bears the following labels: (1) ' Silhet '; (2) ' *luctuosa* Sm., type '; (3) a white label with red margin, ' type '; (4) ' B.M. type Hymen. 15.1343 '; (5) ' Holotype ', added by Betrem, 1966. Another old specimen in the British Museum is from Sarawak. It was purchased from Stevens. There are two females in the Oxford Museum that may be syntypes. Both are from Silhet in the extreme north-eastern part of East Pakistan (Bengal in 1855). One has an entirely black abdomen. The other has four yellow spots on it. J.G.B.]

44. *minuta*

1859. *Scolia minuta* Smith, ♂: 11. ' Hab. Celebes '.
1864. *Scolia* (*Discolia*) *minuta* Saussure & Sichel, ♂: 125, n. 128.
1928. *Campsomeris* (*Campsomeris*) *marginella terminata* (Smith) Betrem: 137.
1937. *Campsomeris marginella terminata* var. *minuta* Betrem, ♂: 41, footnote.
1941. *Campsomeris* (*Campsomeriella*) *marginella terminata* Betrem: 90.
= *Campsomeris* (*Micromeris*) *marginella terminata* (Smith) Betrem, infra-subspecific form *minuta* Smith, *teste* Betrem.

A male in the Saunders collection bears a label ' Mak ' and has been correctly labelled ' holotype ' by Betrem (1928 : 137). But its pin-label ' Mak ' refers to Makassar in the South Celebes, not to the island of Makian.

[The holotype belongs to the subspecies *terminata* of *Campsomeris* (*Micromeris*) *marginella* but differs as a variety in being much smaller, having only two yellow scutellar spots, and in having its metanotum yellow medially. Its abdominal bands are normal. J.G.B.]

45. *modesta*

1855. *Scolia modesta* Smith, ♀, ♂: 91. ' Hab. Philippine Islands, B.M. '.
1864. *Scolia* (*Discolia*) *modesta* Saussure & Sichel, ♀, ♂: 124, n. 126.
1893. *Discolia modesta* Gribodo, ♂, *Bull. Soc. ent. ital.* **25** : 178.
1928. *Campsomeris* (*Campsomeris*) *marginella modesta* Betrem, ♀, ♂: 136.
1941. *Campsomeris* (*Campsomeriella*) *marginella modesta* Betrem: 90.
= *Campsomeris* (*Micromeris*) *marginella modesta* (Smith) Betrem.

Betrem (1928 : 136) stated that the holotype is in the British Museum and indicated that a male syntype belongs to a different species. Since *modesta* was described from syntypes, I hereby designate the female to be LECTOTYPE, not holotype, and it has been so labelled.

[The lectotype bears the following labels: (1) ' 42/22 ', on its reverse ' Philip. Isl '; (2) ' *modesta* type Smith '; (3) ' B.M. type Hym. 15.1332 '; (4) a white paper label with red margin. J.G.B., 1966].

46. *morata*

1864. *Scolia morata* Smith, ♂: 28, ' Hab. Mysol '.
1864. *Scolia larradiformis* Smith, ♀: 28, ' Hab. Waigeou '.
1963. *Scolia* (*Diliacos*) *larradiformis morata* Krombein, ♂: 615, 619, fig. 30.
= *Diliacos quadriceps larradiformis* (Smith) Micha or possibly *Diliacos quadriceps morata* (Smith) Micha.

[There are two males in the Saunders collection. Specimen A bears a circular label on which is written just ' M ', which presumably stands for Mysol. Specimen B bears no label, but undoubtedly is also a syntype from Mysol, being an instance of what is referred to in the introduction where only the first of two specimens from the same locality bears the locality label. Specimen B bears my label ' Holotype ' but since the species was described from syntypes, I now select it to be the LECTOTYPE, and have so labelled it.

Professor Varley of the Oxford Museum very kindly loaned these two syntypes to Dr Krombein, who sent them to me for re-examination here in Ithaca, March, 1962. I examined them again in 1964. Both agree with Smith's original description.

Both belong to the same taxon, but differ slightly in structure. Specimen (A) has the disc of the clypeus and of the mesonotum less punctate than has specimen (B). My description of the male of *morata* (1928 : 192) was drawn from specimen (B), the lectotype. The male lectotype of *morata* Smith is probably the male of *Diliacos larradiformis* (Smith, 1864), which was described from the female. Krombein established *morata* as a subspecies of *larradiformis*; on p. 615 he says: ' The female of *larradiformis larradiformis* may not be separable from that of *l. morata*. I have examined the male type of *S. morata* from Mysol. It differs slightly in the shape of the parameres (squamae), the volsellae (fig. 30) are slightly more slender and the wings have greenish golden reflection '.

The female from Mackay that I assigned to *morata* (1928 : 192) is not the female of that species. In 1933, I made it the holotype of a new species, *papuasiae*, which Krombein (1963 : 622) has synonymized with *D. glabrata glabrata* Micha. He also has described the male (loc. cit.). I agree with him. J.G.B.]

47. **morosa**, 1861

1859. *Scolia velutina* Saussure, ♂, *Stettin. ent. Ztg* **20** : 175.
1861. *Scolia morosa* Smith, ♀: 118. ' Hab. Amboyna, Saunders Collection ', *nec* 1862 : 53.
1864. *Scolia* (*Triscolia*) *velutina* Saussure & Sichel, ♂: 41, n. 13.
1927. *Triscolia velutina velutina* Micha: 102.
1928. *Scolia* (*Megascolia*) *velutina velutina* Betrem, ♂, ♀: 245.
= 1964. *Megascolia* (*Megascolia*) *velutina velutina* (Saussure) Betrem & Bradley: 441, n. 3c.

The female ' holotype ' of *morosa* in the Saunders collection has been so labelled by Betrem and is referred to in his monograph, 1928 : 246. It agrees with Smith's description. It belongs to the taxonomic species and subspecies to which Betrem applied there the name *velutina*.

[There is a second female in the Saunders collection labelled ' *Scolia morosa* Smith, Sul. ' i.e. Sulu Islands. It stands above a label ' *nigrita* Fabr. '. It cannot be a syntype. J.G.B.]

48. **morosa**, 1862

1862. *Scolia morosa* Smith, ♀: 53. ' Hab. Celebes (Tondano), Saunders Coll. ', *nec* 1861.
1864. *Elis* (*Dielis*) *morosa* Saussure & Sichel, ♀: 193, n. 204.
1897. *Scolia celebesiaca* Dalla Torre : 151.
= *Campsomeris* (*Sericocampsomeris*) *quadriguttulata celebesiaca* (Dalla Torre) Betrem, **comb. n.** and **stat. n.**

Betrem was originally unable to find the type in the Saunders collection, where it should be. There is, however, a female labelled ' Tond ' in that collection that is not labelled as *morosa* '62, but that agrees precisely with Smith's description of that species. We agree that it is undoubtedly the holotype. Probably Saunders or someone noted that it did not agree with specimens in the collection labelled ' *morosa* Smith ' (but which are *morosa* 1861, not 1862) and set it aside without a label, not realizing that Smith had described a second *morosa*. I have labelled it ' Holotype *morosa* Smith 1862, nec 1861 '. Since *celebesiaca* D. T. was a new name for *morosa*, 1862, both have the same type.

S. celebesiaca D.T. as defined by Smith's type of *morosa* '62, is not the species to which Betrem misapplied the name *morosa* Sm. (1928 : 110). The latter taxonomic species at present stands without a name but Betrem is here establishing a name for it. See below.

Provision for *celebesiaca* D.T. (= *morosa* Smith '62, *nec* '61) can be made by the following addition to Betrem's key to the females of *Campsomeris*, 1928 : 74 (for revision of couplet 76 see Betrem, 1933 : 239).

In lieu of 77a, read:

77a. V. und Tempora fast ganz glatt 77 1/2

77 1/2a. T. nicht matt, glanzend, deutlich fein punktiert, hinter der subapikalen Punktreihe nur schmal glatt; Scut. fein, ziemlich dicht, eingestochen p., hinten glatt (? auch in *sitolensis*) 78

b. T. matt; Scut. glanzend, vorn und auf den Seiten mit einigen groben P. **celebesiaca** D.T.

In lieu of 79a read:

79a. P. der Ar.h.m. feiner, ziemlich fein p. so gross wie die Zwischenraume zwischen ihnen; P. der T. dichter . . . . **bradleyi** Betrem.

[Description of the holotype of *Scolia morosa* Smith, 1862.

♀. Anterior margin of the clypeus rounded, broader medially than at the sides of its central portion, the lateral lobes flattened, disc uneven, its anterior border striate. Impunctate part of the front short; fissura frontalis deep; a small group of punctures just below the front ocellus. Vertex impunctate except its declivous portion deeply and densely punctate; a row of punctures next to the orbits; temples impunctate; sides of the front near the orbits deeply punctate.

Scapulae densely and deeply punctate with a deep longitudinal depression, their posterior margin broadly impunctate; sides behind the punctate callosity impunctate, sharply limited above from the punctate scapulae. Upper area of the mesopleura almost entirely impunctate except for a small area below the fore wings; the upper half of the lower posterior area of the mesopleura impunctate. Transition below the hind wings blunt; metapleura with only minute punctures. Carina lateralis long, extending to the sides of the area horizontalis lateralis and the area posterior lateralis. Mesoscutum impunctate medially, deeply, coarsely, and densely punctate anteriorly and laterally; scutellum impunctate except for lateral anterior, triangular, coarsely punctate areas; metanotum densely, deeply punctate, except at the sides, posteriorly, and a narrow impunctate median strip. Area horizontalis medialis not so coarsely punctate as the metanotum, laterally finely punctate, an indication of a blunt transverse carina at its apex; area horizontalis lateralis with a transverse punctate area; area posterior impunctate except for fine punctures on the upper third of its median plate.

Fore wings without setae, except along their anterior margins. Inner spur of tibia III brown, blunt, not spatulate. Basal tergites opaque. Tergite 2(1) truncate anteriorly. Description drawn from the holotype of *Scolia morosa* Smith, from Tondano. J.G.B.].

[***Campsomeris* (*Tristimeris*) *bradleyi*** Betrem, **sp. n.**

1928. *Campsomeris* (*Trielis*) *morosa* Betrem, ♀, ♂: 110. A misidentification of *Scolia morosa* Smith, 1862, *nec* 1861.

1938. *Campsomeris bradleyi* Betrem, *nomen nudum*: 358 and 360.

In discussing the Scoliidae of the Celebes I twice mentioned a *Campsomeris bradleyi* (Betrem, 1938 : 358 and 360). This is a manuscript name which I now wish to validate.

♀. The description of the female applied incorrectly to *Campsomeris morosa* (Smith, 1862) by Betrem, 1928 : 110, is the description of the female of this species.

Holotype ♀. The holotype is the female referred to by me, loc. cit., as ' Plesiotype (Paratype Smith's?) Celebes, *leg.* Pfeiffer, Coll. Smith, pres. by Farren-White, B.M. '. It is registered as B.M. Type, Hym. 15.1431.

♂. The description of a male applied incorrectly to *C. morosa* Smith by Betrem, 1928 : 110, is the description of the male of this species.

Allotype, ♂. The allotype is the male referred to by me, loc. cit., as ' Allotype: Pagoewat, Celebes, leg. Rosenberg, M. L. '. J.G.B.]

49. *nigerrima*

1861. *Scolia nigerrima* Smith, ♀: 116. ' Hab. Dory, Saunders Coll. '.
1864. *Scolia* (*Discolia*) *nigerrima* Saussure & Sichel, ♀: 105, n. 93.
1928. *Campsomeris* (*Dielis*) *nigerrima nigerrima* Betrem, ♀: 106.
= 1933. *Campsomeris* (*Laevicampsomeris*) *nigerrima* (Smith) Betrem: 238.
1963. *Campsomeris* (*Laevicampsomeris*) *nigerrima* Krombein, ♀: 568.

The holotype is in the Saunders collection and bears a label ' Dor ' and Smith's mss. label ' *Scolia nigerrima.* ' Betrem has labelled it ' type ' and recorded it as ' Holotype ', 1928 : 106.

50. *nitida*

1859. *Scolia nitida* Smith, ♀: 152. ' Hab. Aru '.
1864. *Scolia* (*Discolia*) *nitida* Saussure & Sichel, ♀: 108, n. 100.
1928. *Scolia* (*Austroscolia*) *punctatissima cupreopennis* Betrem, ♀, ♂: 212.
1963. *Scolia* (*Austroscolia*) *nitida nitida* Krombein, ♂, ♀: 641.
= *Austroscolia nitida nitida* (Smith) Betrem, **comb. n.**

This is not the taxonomic species which Betrem (1928 : 210) termed *nitida* and which (1933 : 254) he renamed *nitidella*. A female specimen in the Saunders collection has been labelled ' Lectotype ' by Betrem, but not published. Thinking that it was the only example from Aru I incorrectly labelled it holotype.

[I hereby designate the female from Aru in the Saunders collection to be the LECTOTYPE.

There is also a female syntype in the British Museum labelled as follows: (1) ' *Sc. nitida* Sm. Aru '; (2) ' Smith coll., presented by Mrs. Farren-White '; (3) ' Type '.

A male from Aru (variety) and a female and a male from Morty Island are not syntypes. J.G.B., July, 1966].

The following characters appertain to the lectotype of *nitida*: Wings green-gold to gold-green, with the apical third purplish red. Dorsal surface of the propodeum polished and almost impunctate, but with very fine, sparse, shallow punctures; disc of tergite 2(1) highly polished and impunctate behind the middle; sides of the tergites punctate, but not closely so; propodeum and sides of the tergites not long-hairy.

51. *nudata*

1855. *Scolia nudata* Smith, ♀: 110. 'Hab. North Bengal. B.M.'.
1864. *Scolia* (*Triscolia*) *nudata* Saussure & Sichel, ♀, ♂: 38, n. 7.
1928. *Scolia* (*Austroscolia*) *nudata* Betrem, ♀: 219.
= *Austroscolia nudata* (Smith) Betrem, **comb. n.**

There are only two females among the older material in the British Museum. One is from 'Madras', hence not the type. The other bears the museum 'Type' label, a label 'N. Bengal', and Smith's mss. label '*nudata* Sm. type.'. It is the specimen from which Betrem (1928 : 219) drew his description and referred to as 'holotype'. I have labelled it 'Holotype'. It is registered as B.M. Type, Hym. 15.1400. It agrees with *nudata*, female, in couplet 7b of the key to species of *Austroscolia*, Betrem, 1928 : 209.

52. *opalina*

1858. *Scolia opalina* Smith, ♀, ♂: 89. 'Hab. Sarawak'.
1864. *Scolia* (*Triscolia*) *opalina* Saussure & Sichel, ♀, ♂: 42, n. 15.
1928. *Scolia* (*Carinoscolia*) *opalina opalina* Betrem, ♀, ♂: 178.
= *Carinoscolia opalina opalina* (Smith) Betrem, **comb. n.**

Betrem, 1928 : 178, incorrectly stated that the holotype is from Borneo in the British Museum. He should have said 'in the Saunders collection'. Since there are two male, and one female syntypes in the Saunders collection it is necessary to select a lectotype labelled 'Sarawak'. I hereby designate a female in the Saunders collection to be LECTOTYPE and have so labelled it. It is the female above mentioned that Betrem labelled and published as holotype. It bears labels 'Sar' and in Smith's mss. '*Scolia opalina* Sm.' and Betrem's label 'Holotype'. The type agrees with *opalina* subspecies *opalina* in Betrem's key, 1928 : 178, couplet 9a, Bb.

[There are also two females in the British Museum, both representing a manuscript species that Smith never described. One bears the labels: (1) 'Sar'; (2) '56/44'; (3) 'type'; (4) 'type, Hym. 15.1407'. It has no card in the index. J.G.B., 1966].

53. *ornata*

1830. *Scolia maculata* Guérin, ♀, *in* Duperry, *Voy. Coquille*, Zool., **2**, pt. 2 : 255.
1855. *Scolia ornata* Smith: 96. 'Hab. Georgia', *nec ornata* Lep., 1845.
1864. *Scolia* (*Discolia*) *nobilitata* var. *maculata* Saussure & Sichel: 132, n. 138.
= *Scolia* (*Discolia*) *nobilitata* Fabricius, infrasubspecific form *maculata* Guérin, **stat. n.**

This was proposed as a new name for *Scolia maculata* Guérin, *nec* Drury, and therefore takes the same type. Both *maculata* and *ornata* are invalid as subspecific names for this variety, but as an infrasubspecific variant, although a name is not essential, *maculata* is available.

54. *personata*

1854. *Scolia fulvifrons* Saussure, ♀, *Mém. Soc. Phys. Hist. nat., Genève*, **14** : 43, pl. 19, fig. 11.
1855. *Scolia personata* Smith, ♂: 91. 'Hab. Silhet. B.M.'.
1864. *Scolia* (*Discolia*) *fulvifrons* Saussure & Sichel, ♀, ♂: 116, n. 11.
1928. *Scolia* (*Triscolia*) *fulvifrons* Betrem ♀, ♂: 238.
= 1964. *Megascolia* (*Regiscolia*) *fulvifrons* (Saussure) Betrem & Bradley: 444, n. 7.

[The holotype, a male, is in the British Museum and bears the following labels: (1) '45/107' with 'Silhet' on the reverse (3 Hymenoptera from Silhet, purchased of Rev. Stainsforth); (2) '*personata* Sm., type'; (3) a white label with red margin 'type'; (4) 'Lectotype', attached by Betrem, 1966. It is registered as B.M. Type, Hym. 15.1428. There is also a female from Silhet, but Smith did not describe it. J.G.B., July, 1966].

55. *prismatica*

1855. *Scolia prismatica* Smith, ♀: 102. 'Hab. Shanghai. B.M.'.
1864. *Elis* (*Dielis*) *prismatica* Saussure & Sichel, ♀: 199, n. 214.
= 1928. *Campsomeris* (*Megacampsomeris*) *prismatica* (Smith) Betrem, ♀, ♂: 152.

[The holotype, a female, is in the British Museum. It bears four labels: (1) '52/28' (meaning from Shanghai, collected by Mr Fortune) and on the reverse 'Shanghai'; (2) a white mss. label '*prismatica* Sm. type'; (3) a white label with red margin 'type'; (4) 'B.M. type Hym. 15.1329'. I have added a holotype label. J.G.B.]

[Characters of the holotype of *S. prismatica*

♀. Front imp. except deeply p. laterally; v. entirely deeply p., medially, anteriorly rather coarsely, densely p., interspaces between the p. very narrow; mesoscut. imp. medially, its hind margin p.; scut. heavily damaged by the pin, but probably p. in greater part (cf. *S. farrenwhitei* below). J.G.B., July, 1966].

[There are two other female specimens in the British Museum named '*S. prismatica*' by Smith but probably not syntypes. The one, which I designate 'A', bears two labels: (1) a mss. label on blue paper '*prismatica* Smith'; (2) 'F. Sm. coll. 79–22'. It is a true specimen of *prismatica*. Fr. p. only laterally; fiss.fr. distinct; mesoscut. p. along its posterior margin; scut. densely p., except its posterior margin.

The second specimen, which I designate 'B' is the holotype of *S. farrenwhitei* Betrem, 1928, a valid species. It bears six labels: (1) a white, triangular, mss. label 'E. Ind'; (2) a blue mss. label '*prismatica* Smith'; (3) '*Campsomeris farrenwhitei* Holotype det. Betrem'; (4) 'Smith coll. pres. by Mrs. Farren-White 99-303'; (5) a white label with red margin 'Type'; (6) 'B.M. type Hym. 15.1335'. Fr. imp., fiss.fr. deep; anterior portion of v. more or less p., its left half more so; post frontal suture deep and distinct, entirely obscured by p. in the holotype of *prismatica*; posterior margin of the mesosc. imp.; scut. broadly imp. medially. J.G.B.]

56. *pulchra*

1854. *Scolia picteti* Saussure, ♀, *Mém. Soc. Phys. Hist. nat., Genève*, **14** : 42, n. 18.
1855. *Scolia pulchra* Smith, ♀: 88. 'Hab. India. B.M.'.
1864. *Scolia* (*Discolia*) *histrionica* Saussure & Sichel, ♀: 121, n. 121, *nec* Fabricius, 1787.
1928. *Scolia* (*Scolia*) *histrionica* Betrem, ♀: 330.
1941. *Scolia* (*Scolioides*) *picteti* Betrem: 166.
= 1964. *Scolia* (*Discolia*) *picteti* Saussure, Betrem & Bradley: 94, n. 73.

[The female holotype in the British Museum bears the following labels: (1) '♀, Ind.'; (2) '*pulchra* Sm. type'; (3) '*histrionica* F. *pulchra* Sm. of Smith's coll.'; (4) a white label with red margin 'type'; (5) 'B.M. type Hym. 15.1373'; (6) 'Holotype' attached by Betrem in 1966. J.G.B., July, 1966].

57. *quadriceps*

1859. *Scolia quadriceps* Smith, ♀, ♂: 153. ' Hab. Aru. Saunders Collection '.
1864. *Liacos* (*Diliacos*) *quadriceps* Saussure & Sichel, ♀: 37, n. 6.
1928. *Scolia* (*Diliacos*) *quadriceps* Betrem, ♀, ♂: 194.
1963. *Scolia* (*Diliacos*) *quadriceps* Krombein, ♀: 613, 615.
= *Diliacos quadriceps quadriceps* (Smith) Betrem, **comb. n.**

There are two females but no males in the Saunders collection. One of the females bears the pin-label ' Bac ' meaning Bachian and Smith's white mss. label ' *Scolia quadriceps* Smith '. Since this specimen does not come from Aru it is not a syntype of *quadriceps*, and has, in fact, been made the holotype of *poultoni* Betrem, 1928. The second female bears no locality label. As Betrem, 1928 : 194, pointed out, it does not belong to the same taxon as the female from Bachian, and is in fact the specimen of *quadriceps* which he used when differentiating *poultoni* from that species. A third female is in the British Museum. It bears the pin-label ' Aru ' and also a printed Smith collection label on which has been written (but not by Smith) the word ' type '; Betrem (1928 : 194) referred to this specimen as Smith's holotype, but we must now say LECTOTYPE. He has re-examined it in 1964, and finds it identical with the unlabelled female in the Saunders collection. Doubtless the two originally stood together, the second one also from Aru, but not given a pin-label.

[*S. quadriceps* differs from *larradiformis* only in the colour of the wings. Krombein, 1963 : 613, has written ' *S. quadriceps* Smith from Aru is an earlier name and may replace either *larradiformis* or *ribbei* for one of those polytypic species '. J.G.B.]

58. *rubromaculata*

1855. *Scolia rubromaculata* Smith, ♀: 99. ' Hab. India. B.M. '.
1864. *Elis* (*Dielis*) *rubromaculata* Saussure & Sichel, ♀: 196, n. 209.
1928. *Campsomeris* (*Dielis*) *rubromaculata rubromaculata* Betrem, ♀: 119.
= 1941. *Campsomeris* (*Sericocampsomeris*) *rubromaculata rubromaculata* Betrem, ♀: 94, 95.

[There are three females in the old collection of the British Museum, one is unlabelled, the other two bear old labels ' Ind? '. Probably they belonged originally with the series in Oxford (a female from India and another without pin-label). I believe that the lectotype should be selected from among the three females in the British Museum. J.G.B., July, 1966].

59. *ruficeps*

1855. *Scolia ruficeps* Smith, ♀, ♂: 111. ' Hab. Philippine Islands. B.M. '.
1927. *Triscolia ruficeps ruficeps* Micha, ♂: 96.
1928. *Scolia* (*Austroscolia*) *ruficeps ruficeps* Betrem, ♀, ♂: 217.
= *Austroscolia ruficeps ruficeps* (Smith) Betrem, **comb. n.**

There are only three specimens amongst the old material in the British Museum: two males from the Philippines and one female with the labels ' E. Ind ' and ' 43 : 43 ' as well as Smith's mss. label ' *ruficeps* Smith type '. The notation ' 43 : 43 ' refers to an accession book which shows the specimen came from ' Moulmein, E. India ' i.e. Burma. Since the typical subspecies, well-characterized by its cupreo-violaceous wings in both sexes, is widely distributed over the Philippines, Java, Burma, eastern India, and elsewhere, it seems very likely that the female from Moulmein is actually the specimen from which Smith drew his description, and that he merely failed to publish that locality in addition to the Philippines from which his males came. Betrem, 1928 : 217, wrote ' Holotype Smith's Philippinen, B.M. ♀ ', but there is no female from the Philippines to be found and he and I are forced to conclude that he had reference to the Moulmein female, and that recording it from the Philippines was an error in his notes, which unfortunately were destroyed during the war.

[Smith published an eight-line description of the female, and only a two-line description of the male. Although he gave only the Philippines as locality, his female did not come from there, because he stated for that sex ' Wings dark fuscous, and having a bright coppery effulgence, dashed with purple in certain lights '. This is true of all Asian females, but not those from the Philippines, the wings of which have a blue-violet effulgence. This species has been split into a number of subspecies in the East Indies. Philippine material is of a subspecies different from the Asian.

From these considerations I hereby designate the female from Moulmein to be the LECTOTYPE. It bears the following labels: (1) ' 43/43 ', on the reverse ' E. Indies ', the number means: ' Six Hymenoptera, E. Indies (Moulmein) purchased from Archdeacon Clerk '; (2) ' *ruficeps* Sm. type '; (3) a white label with red margin ' type '; (4) a red label ' lectotype ' attached by Bradley in 1929; (5) ' B.M. type 15.1889 '. The wings of the lectotype are more bronze, without purple. This involves a correction of the published type-locality.

The subspecifically different males bear the label ' 55/77 ' meaning: ' 6 Hymenoptera. Philippine Isl. purchased from Cuming '. J.G.B., July, 1966].

60. *rufipes*

1855. *Scolia rufipes* Smith, ♂: 95. ' Hab. Port Natal. B.M. ' *nec* Illiger, 1802.
1864. *Scolia* (*Discolia*) *rufipes* Saussure & Sichel, ♀, ♂: 91, n. 75.
= 1964. *Scolia* (*Discolia*) *rufipes* Smith, *teste* Betrem & Bradley: 95, n. 118.

This is a species which I cannot at present place. An unique male in the British Museum labelled ' Port Natal, 52–79 ' and bearing Smith's mss. label ' *rufipes* Sm. Type ' is the holotype. It is not advisable to rename this nominal species before its synonymy is known.

61. *senex*

1855. *Scolia senex* Smith, ♂: 94. ' Hab. Cape of Good Hope (Coll. Saunders, Esq.) '.
= 1864. *Scolia* (*Discolia*) *senex* Smith, Saussure & Sichel: 98, n. 87.

There is only one male in the Saunders collection. It bears a label ' *S. incana* mss. C. G. H. Drege ' (i.e. Cape of Good Hope), and a mss. label, not written by Smith, that it is *Scolia senex* Sm. I have labelled it ' Holotype '.

62. *signata*

1855. *Scolia signata* Smith, ♀: 105. ' Hab. South Africa (Gambia). B.M. ' *nec* Panzer, 1799.
1864. *Elis* (*Dielis*) *signata* Saussure & Sichel, ?♀: 176, n. 180.
1906. *Scolia* (*Dielis*) *labilis* Schulz n.n., *Spolia hymen.*: 164.
= *Campsomeris* (*Megameris*) *labilis* (Schulz) Betrem, **comb. n.**

The holotype, an unique female, is in the British Museum marked ' type ' on Smith's mss. pin-label. [This specimen bears four labels, as follows: ' B.M. Type Hym. 15.1355 ', ' Holotype *signata* Smith *teste* 1928, J. C. Bradley ', ' *signata* type, Smith' ' Gambia '. J.G.B.] It is registered as B.M. Type, Hym. 15.1227.

[Description of the type of *Scolia signata* Smith

♀. Black; mandibles and anterior margin of the clypeus dark-brown; the following parts yellow; the apical half of tergite 2(1), the apical 2/3 of tergite 3(2), except for dark lateral incisions, and the apical 2/3 of tergite 4(3), narrowed laterad at halfway from the centre. Vestiture almost white except for the setae on abdominal segments 5(4) and following, those on the sides of tergite 4(3) and the fringes of sternites 3(2) and 4(3). Wings yellow-hyaline; veins brown, the costa and subcosta very dark. Longer apical spur of tibiae III somewhat spatulate but not very broad, dark brown; spines of tibiae almost black.

The structure is quite like that of *Campsomeris soleata* (Gerstaecker), but is more punctate between the ocellar triangle and the upper part of the eyes; the mesoscutum medially is more impunctate, the scutellum and metanotum have fewer punctures, the latter being rather sparsely punctate. The very sharp crest of the mesopleura is notable.

Described 5th July, 1964 from the holotype in the British Museum. J.G.B.]

63. *soror*

1845. *Scolia cyanipennis* Lepeletier, ♀, *Hist. nat. ins. Hymen.* **3** : 524, n. 7. A misidentification of *Scolia cyanipennis* Fabricius, 1804.
1855. *Scolia soror* Smith: 96, n. 50, n.n.
1855. *Scolia viridipennis* Smith; 96, n. 52, n.n.
1864. *Scolia* (*Discolia*) *soror* Saussure & Sichel: 126, n. 131.
1928. *Scolia* (*Austroscolia*) *soror* Betrem, ♀, ♂: 213.
= *Austroscolia soror* (Smith) Betrem, **comb. n.**

Four lines apart on p. 96 of his catalogue Smith rechristened Lepeletier's misidentification of *cyanipennis* Fabr. first *soror*, then *viridipennis*. Lepeletier, p. 254, printed a description of a female from ' Port-Jackson, Nouvelle Holland ' which he misidentified as *cyanipennis* F. He did not use *cyanipennis* as a name for a new species, homonym of *cyanipennis* F., but the description that he gave applies to a species that had not at that time been given a name of its own. Consequently there is neither holotype nor syntypes of *cyanipennis* Lepeletier, because the type of that nominal species is Fabrician.

The type-material of both *soror* and *viridipennis* must be identical, and can only be that upon which Lepeletier's new description of what he misidentified as *cyanipennis* was based. In searching for Lepeletier's types, I paid no attention to *cyanipennis* for that was not one of Lepeletier's nominal species. However, Saussure & Sichel, p. 126, referred to material from ' Nova Hollandia ' in ' Musea Guérinianum, Parisiense, Saussurianum. '. Some of these collections may contain Lepeletier's specimens, especially Paris. But search must also be made in Turin.

Which name, *soror* or *viridipennis*, shall be retained has been settled by Saussure & Sichel, 1864, as first revisers. They adopted *soror*.

[The use of two new names by Smith for *Scolia cyanipennis*, sense of Lepeletier, not of Fabricius, may be explained by the fact that he had before him two forms: the one that he called *soror* has wings with blue effulgence, the other that he called *viridipennis* has wings with green effulgence. Wings of the latter type occur among subspecies of *Austroscolia nitida* Smith, a form of which occurs in Australia, but I have no specimens from there for comparison.

I was unable to find a specimen in the British Museum that Smith had labelled *viridipennis*. J.G.B., September, 1966.]

[I am uncertain about the real identity of *Scolia cyanipennis* in the sense of Lepeletier, not Fabricius. As long as the type is unknown we are agreed that it is better to accept my interpretation (1928, p. 213) which is based on specimens in my collection.

There is only one specimen of *soror*, a male, in the British Museum that predates the establishing of the name *soror*; it bears the following labels: (1) ' 63/56 ' with ' Sydney, NSW. ' on the reverse, the numerals meaning also: ' NSW. Sydney pres. by Dr. Andrew St. Clair '; (2) ' *cyanipennis* St. F. *soror* Sm. of Smith coll. '.

The mesonotum in *soror* is entirely, very remotely, punctate. J.G.B., July, 1966].

64. *specifica*

1855. *Scolia specifica* Smith, ♀: 89. ' Hab. India (Coll. W. W. Saunders, Esq.) '.
1864. *Scolia* (*Discolia*) *specfica* Saussure & Sichel, ♀: 89, n. 13.
1928. *Scolia* (*Scolia*) *decorata specfica* Betrem, ♀: 322.
1964. *Scolia* (*Discolia*) *decorata* Betrem & Bradley: 93, n. 66.
= *Scolia* (*Discolia*) *decorata specfica* Smith.

Betrem has indicated that a female in the British Museum is the holotype, but it is only a syntype. Smith stated that his description is based on material in the Saunders collection. There is an unique female in the Saunders collection which it is necessary to designate LECTOTYPE and I hereby do so.

An interrupted yellow line on the shoulders of the type, mentioned by Smith, throws the species into couplet 39a on p. 260 of Betrem's key, 1928. *Sc. histrionica* [= *japonica*] also comes under couplet 39a.

65. *speciosa*

1858. *Scolia speciosa* Smith, ♀: 90. ' Hab. Sarawak '.
1864. *Scolia* (*Triscolia*) *speciosa* Saussure & Sichel, ♀: 44, n. 17.
1928. *Scolia* (*Megascolia*) *speciosa* Betrem, ♀, ♂: 243.
= 1964*a*. *Megascolia* (*Megascolia*) *speciosa* (Smith) Betrem & Bradley: 441, n. 4.

The holotype (so labelled by Betrem, although he does not mention it in his monograph, 1928 : 243) is in the Saunders collection. It is an unique female labelled ' Sar ' and bearing Smith's mss. label ' *Scolia speciosa* Sm. '. It agrees exactly with Smith's description.

66. *subobscura*

1845. *Colpa infuscata* Lepeletier, ' ♀ ' (*recte* ♂) *Hist. nat. ins. Hymen.*, **3** : 537, n. 4, *nec* Klug, 1832. Cayenne.
1854. *Scolia infuscata* Burmeister, ♀: 23, n. 23.
1855. *Scolia subobscura* Smith: 102, n. n. for *infuscata* Lepeletier.
1855. *Scolia vitripennis* Smith, ♂: 108. ' Hab. Brazil (Amazonas) Coll. W. W. Saunders, Esq. '.
1864. *Elis* (*Dielis*) *infuscata* Saussure & Sichel: 215, n. 230.
1864. *Elis* (*Dielis*) *vitripennis* Saussure & Sichel, ♂: 216, n. 231.
= 1957. *Campsomeris* (*Campsomeris*) *vitripennis* (Smith) Bradley: 75.

Subobscura was a new name for *infuscata* Lep., hence based on Lepeletier's type. In 1957, as first reviser, I selected *vitripennis* as the valid name of the species, rejecting *subobscura*. For a full discussion of this case see Bradley, 1964*a* : 106.

67. *terminata*

1859. *Scolia terminata* Smith, ♂: 10. ' Hab. Celebes '.
1864. *Scolia* (*Discolia*) *terminata* Saussure & Sichel, ♂: 124, n. 127.
1928. *Campsomeris* (*Campsomeris*) *marginella terminata* Betrem, ♀, ♂: 137.
1937. *Campsomeris marginella terminata* Betrem, ♂: 92.
1941. *Campsomeris* (*Campsomeriella*) *marginella terminata* Betrem: 90.
= *Campsomeris* (*Micromeris*) *marginella terminata* (Smith) Betrem.

The holotype is an unique male labelled ' Mak ' in the Saunders collection. This label refers to Makassar and not Makian. This specimen bears Smith's mss. label ' *Scolia terminata* Sm. ' and Betrem's holotype label. It runs to ' *marginella* subspecies *terminata* ' in Betrem's key, 1928 : 79, couplet 47a. Betrem (1937 : 93) has published a revised key. Betrem, from a re-examination of the type, notes that the scutellum and metanotum are yellow, and that the band on tergite 3(2) turns abruptly forward at each side; compare also *minuta*.

68. *undulata*

1775. *Tiphia tricincta* Fabricius, ♂, *Syst. ent.*: 354, n. 6.
1855. *Scolia undulata* Smith, ♀: 104. ' Hab. Africa (Coll. F. Smith.) '.
1864. *Elis* (*Dielis*) *undulata* Saussure & Sichel, ♀, ♂: 175, n. 179.
1927. *Campsomeris tricincta* Rohwer, ♀: 153.
1957. *Campsomeris* (*Xanthocampsomeris*) *tricincta* Bradley: 71.
= *Campsomeris* (*Xanthocampsomeris*) *tricincta* (Fabricius) Rohwer.

Two females from the Smith collection are in the British Museum, labelled respectively in the same mss. ' Afr. ' and ' W. Afr. '. The former also bears Kirby's mss. blue label ' *undulata* Sm. ' and a museum type-label ' 15.1361 '. It agrees with the description, while the other varies in detail of colour markings and has black antennae. I have labelled the former ' Holotype '. One antenna is broken at the third segment and the other is lacking. The three segments are rufous, infuscated above. The locality is false, for the type is a specimen of the West Indian *tricincta*.

69. *ventralis*

1873. *Scolia ventralis* Smith, ♂: 186. ' Hab. Hiogo (Japan) '.
1928. *Campsomeris ventralis* Betrem, ♂ : 337.
1941. *Scolia* (*Scolioides*) *histrionica ventralis* Betrem, ♀, ♂: 165.
= *Scolia* (*Discolia*) *decorata ventralis* Smith.

[The holotype is in the British Museum, it bears the museum number ' 15.1333 ', ' Ihogo ' [*sic*!] ' Japan, *Scolia ventralis* Smith type ♂ ', ' type ', and ' Smith collection 79–22 '. J.G.B.]

70. *venusta*

1855. *Scolia venusta* Smith, ♀, ♂: 90. ' Hab India (Coll. Saunders, Esq.) '.
= 1864. *Scolia* (*Discolia*) *venusta* Smith, *teste* Saussure & Sichel, ♀, ♂: 120, n. 120.
1928. *Scolia* (*Scolia*) *venusta*, ♀, ♂ Betrem: 292.
1941. *Scolia* (*Scolioides*) *venusta* Betrem: 147.

There are a male and a female in the Saunders collection, labelled ' Ind ' and a female labelled ' Ceylon '. Betrem, 1928 : 292, referred to the female from India as ' Holotype ' but since the species was described from both sexes it is only a syntype. I hereby designate it LECTOTYPE, and have so labelled it.

71. *viridipennis*

1845. *Scolia cyanipennis* Lepeletier, ♀: 524, n. 7, *nec* Fabricius.
1855. *Scolia soror* Smith: 96, n. 50, n. n.
1855. *Scolia viridipennis* Smith: 96, n. 52, n. n.
1864. *Scolia* (*Discolia*) *soror* Saussure & Sichel, ♀, ♂: 126, n. 131.
= *Austroscolia soror* (Smith) Betrem, **comb. n.**

See under ' 63 *soror* ' for details of this case.

72. *vitripennis*

1845. *Colpa infuscata* Lepeletier, ' ♀ ' (*recte* ♂): 357, n. 4, *nec* Klug, 1832.
1854. *Scolia infuscata* Burmeister, ♀: 33, n. 33.
1855. *Scolia subobscura* Smith: 102, n. n. for *infuscata* Lep., *nec* Klug.
1855. *Scolia vitripennis* Smith, ♂: 105. ' Hab. Brazil (Amazonas) (Coll. W. W. Saunders, Esq.) '.
1864. *Elis* (*Dielis*) *infuscata* Saussure & Sichel, ' ♀ ' (*recte* ♂): 215, n. 230.
1864. *Elis* (*Dielis*) *vitripennis* Saussure & Sichel, ♂: 216, n. 231.
= 1957. *Campsomeris* (*Campsomeris*) *vitripennis* (Smith) Bradley: 75.

The holotype, which I have so labelled, is in the Saunders collection. It bears a label: ' Amaz. ' and agrees with the description. For a detailed discussion of this case, see Bradley, 1964*b* : 106. Also see under *infuscata* Smith, above.

[There are also two males in the British Museum, one incorrectly labelled type. They are: (A) labelled (1) ' Mex. 61/118 '; (2) ' *vitripennis* Sm. type '; (B) labelled ' Para, 70/16 '. Neither can be a syntype, since they were obtained by the British Museum later than 1855. J.G.B., July, 1966].

73. *vivida*

1855. *Scolia vivida* Smith, ♂: 89. ' Hab. Madras, B.M. '.
= 1864. *Scolia* (*Discolia*) *vivida* Smith, *teste* Saussure & Sichel, ♂: 123, n. 125.
1928. *Scolia* (*Scolia*) *vivida* Betrem, ♀, ♂: 329.

[There are two males in the British Museum. I hereby designate the LECTOTYPE to be the one bearing the following labels: (1) ' Madras '; (2) ' 99/303 ' which means ' Smith coll. presented by Mrs. Farren-White '; (3) ' Lectotype ', label attached by Betrem, 1966. It is registered as B.M. Type, Hym. 15.1429. The second specimen, without a label, is probably a syntype. J.G.B., July, 1966].

74. *zonata*

1855. *Scolia zonata* Smith, ♀, ♂: 116. ' Hab. New Holland. B.M. '.
1864. *Elis* (*Trielis*) *zonata* Saussure & Sichel, ♀, ♂: 141, n. 150.
1928. *Campsomeris* (*Pseudotrielis*) *zonata* Betrem, ♀, ♂: 83.
= *Trisciloa* (*Pseudotrielis*) *zonata* (Smith) Betrem, **comb. n.**

A female in the British Museum bears a museum type-label ' 15.1310 ', a label ' 56/94 ' (which means ' Between Sydney and Moreton Bay or in S. Australia ') and Smith's mss. label reading ' Zonata Sm. Type '. I hereby designate this female to be the LECTOTYPE and have so labelled it. Betrem, 1928 : 84, called it ' Holotype ' but the species was described from two sexes without specification of the type.

[There is one female of *Scolia zonata* in the American Museum of Natural History. It bears the following labels: (1) ' Austr. ' on a round blue label, characteristic for Smith; (2) ' Collection J. Angus 346 '; (3) ' *Scolia zonata* Sm. '; (4) ' Australia '. It came from the collection of J. Angus, along with the presumptive holotype of *Sc. apicata*, referred to above. This female may be regarded as an additional syntype. J.G.B.]

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[8] [I did not find the exact date of publication known in the British Museum, but the preface is dated March 7, 1855. J.G.B.]

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